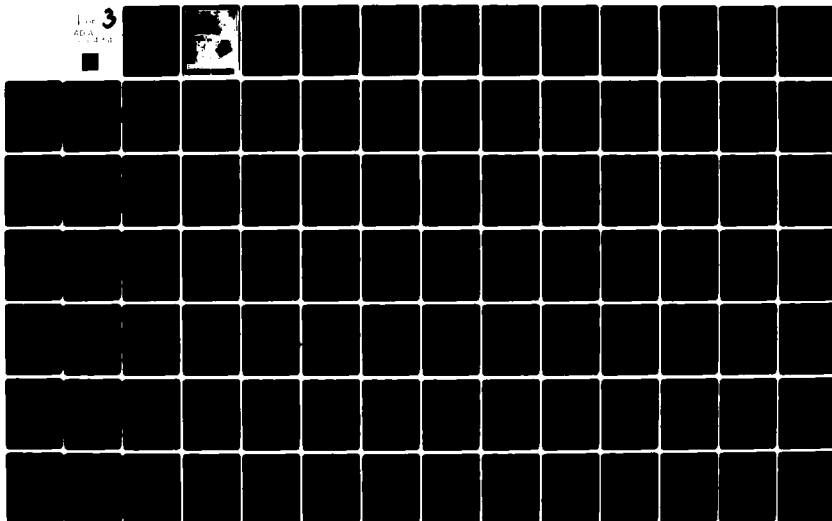


AD-A112 434

FUGRO NATIONAL INC LONG BEACH CA
MX SITING INVESTIGATION. WATER RIGHTS INVENTORY, NEVADA-UTAH. W--ETC(U)
DEC 80 F04704-80-C-0006
NL

UNCLASSIFIED

For 3
ADA
100-100

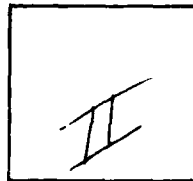


A
2 4 3

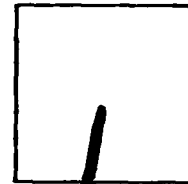
PHOTOGRAPH THIS SHEET

AD-A112 434

DTIC ACCESSION NUMBER



LEVEL



INVENTORY

FN-80-Dec-1
DOCUMENT IDENTIFICATION

This document has been approved
for public release and sale; its
distribution is unlimited.

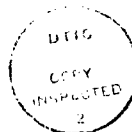
DISTRIBUTION STATEMENT

ACCESSION FOR	
NTIS	GRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
JUSTIFICATION	
BY	
DISTRIBUTION /	
AVAILABILITY CODES	
DIST	AVAIL AND/OR SPECIAL
A	

DISTRIBUTION STAMP



DATE ACCESSIONED



32 10 144

DATE RECEIVED IN DTIC

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDA-2

AD A 112434

MX SITING INVESTIGATION
WATER RIGHTS INVENTORY
NEVADA-UTAH

WATER RESOURCES PROGRAM FY 80

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office (BMO)
Norton Air Force Base, California 92409

Prepared by:

Fugro National, Inc.
3777 Long Beach Boulevard
Long Beach, California 90807

19 December 1980

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER FN-80-DEC-1	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) MX Siting Investigation Water Rights Inventory Nev-Ut Water Resources Program FY 80		5. TYPE OF REPORT & PERIOD COVERED Final
7. AUTHOR(s) Fugro National, Inc.		6. PERFORMING ORG. REPORT NUMBER FN-80-DEC-1
9. PERFORMING ORGANIZATION NAME AND ADDRESS Ertec Western Inc. (formerly Fugro National) P.O. Box 7765 Long Beach CA 90807		8. CONTRACT OR GRANT NUMBER(s) F04704-80-C-0006
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Department of the Air Force Space and Missile Systems Organization Worten AFIS CA 92409 (SAMSO)		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 64312 F
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 19 Dec 80
		13. NUMBER OF PAGES 227
		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Distribution Unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) Distribution Unlimited		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Water Rights water Law, water appropriation, water use, surface water, ground water, perennial yield, water rights		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Results of the water rights inventory in the proposed MX siting area of Utah and Nevada show that the acquisition of a legal water right is divided into three steps: the application to establish a date of priority; a permit to allow the power to proceed; and a certificate establishing the legal status of a water right, in most valley areas. The work done is much less than the water rights in the valley.		

FOREWORD

This report was prepared as part of the MX Water Resources Program for the Ballistic Missile Office (BMO) in compliance with Contract No. F04704-80-C-0006, CDRL Item 004A2. It includes a summary of the Phase II Legal Study, consisting of a water rights inventory of the Nevada-Utah siting area conducted for Fugro National by the Desert Research Institute (DRI). Included as Appendix A is the entire DRI report titled, "Water Rights in Nevada and Utah: An Inventory Within the MX Area."

Phase I of the Legal Study, also prepared by DRI, was submitted by Fugro National, Inc. to the BMO in February 1980 and was revised in June 1980. The Phase I report is an overview of Nevada and Utah water law including historical development and current procedures for water rights acquisition.

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
1.0 <u>INTRODUCTION</u>	1
2.0 <u>RESULTS AND CONCLUSIONS</u>	3

LIST OF TABLES

Table Number

1 Summary of Hydrologic and Water Rights Data	4,5
---	-----

APPENDIX

APPENDIX

A	Water Rights In Nevada and Utah: An Inventory Within the MX Area
---	---

1.0 INTRODUCTION

The management and future development of water supplies in Nevada and Utah is under the jurisdiction of the respective state engineer. To define the current water laws, appropriation procedures, and existing water appropriations in the proposed MX siting valleys, a two-phase legal study was initiated. These studies were conducted for Fugro National by the Desert Research Institute (DRI) in Nevada. The Phase I study included both an overview of the development of water law and rights in Nevada and Utah and a discussion of the step-by-step procedures for water appropriation in the two states. The Phase II study, summarized herein, was conducted to determine all water right owners of record within the MX area and to determine the extent of those water rights. The study included an estimate of the total quantity of water currently appropriated within the MX siting area, along with estimates of the available water supply.

The Phase II study was compiled from records maintained by the state engineer offices in Nevada and Utah. Data from the inventory were compiled for the siting valleys in Nevada and Utah and tabulated in accordance with the legal status of each water appropriation during the compilation period (December 1979 to March 1980). During the study, a total of 3476 water right files were examined in Nevada and 1884 in Utah.

Although the study has not been certified, approved, or agreed to by either the state engineer of Nevada or Utah, it is considered to be the most thorough and accurate study of its kind

to date and it represents an appropriate data base for water resources planning in the area.

2.0 RESULTS AND CONCLUSIONS

Results of the Phase II study are summarized in Table 1, which lists water appropriation data by valley according to source of the water supply and legal status of the water appropriations. Although precise terminology varies slightly between the two states, in general, the acquisition of a legal water right is divided into the following three steps:

1. An Application: This establishes a date of priority, and it may be either approved, rejected, under protest, rejected and under appeal, or withheld pending further study;
2. A Permit: This allows the party to proceed with an approved application under conditions prescribed by the approval; and
3. A Certificate: This establishes the legal status of a water right.

The certificate is, therefore, the legal water right.

For water that was in use at the time the water law was first enacted (vested rights), a different procedure is used. These users file a Proof of Appropriation which claims that a certain amount of water has historically been used. The actual vested water right must then be determined by adjudication.

The water rights information, shown in Table 1, is grouped according to: 1) applications and permits, and 2) proofs (of appropriation) and certificates. The rationale for this grouping is as follows:

- A. Neither an application nor a permit represents a perfected water right. However, an application does establish a priority date in time and, should it be approved and all conditions met, could eventually become a valid water right. The permit (or approved application) represents an intermediate stage of somewhat more substance in that the applicant has authority to proceed with those steps necessary for perfecting the water right.

VALLEY	WATER RIGHTS DATA, Acre - Ft/Yr									
	HYDROLOGIC DATA, Acre - Ft/Yr		SURFACE WATER			GROUND WATER			SURFACE AND GROUND WATER	
	ESTIMATED SURFACE RUNOFF	ESTIMATED GROUND WATER PERENNIAL YIELD	PERMITS AND APPLICATIONS	CERTIFICATES AND PROOFS	TOTAL	PERMITS AND APPLICATIONS	CERTIFICATES AND PROOFS	TOTAL	PERMITS AND APPLICATIONS	CERTIFICATES AND PROOFS
NEVADA:										
BIG SMOKY (1)	> 43,000	74,000	15,301	25,205	40,506	115,483	32,457	147,940	130,784	57,662
KOBEH	8,000	16,000	723	—	723	1,337	12,615	13,952	2,060	12,615
MONITOR	67,000	18,000	11,274	10,458	21,732	30,071	226	30,297	41,345	10,684
RALSTON	10,000	6,000	8,683	162	8,845	52,519	1,276	53,795	61,202	1,438
STONE CABIN	9,700	2,000	1,050	518	1,568	29,620	3,897	33,517	30,670	4,415
ANTELOPE (2)	15,000	> 4,000	52	1,519	1,571	1,356	993	2,349	1,408	2,512
NEWARK	8,000	18,000	35	537	572	24,939	42	24,981	24,974	579
LITTLE SMOKY (3)	> 6,000	> 6,000	831	9,871	10,702	12,802	174	12,976	13,633	10,045
HOT CREEK (4)	8,000	6,000	18,865	1,050	19,915	25,293	3,813	29,106	44,158	4,863
PENoyer	2,000	5,000	2,212	162	2,374	36,153	15,164	51,317	38,365	15,326
COAL	Minor	6,000	5	184	189	6,515	—	6,515	6,520	184
GARDEN (4)	8,000	6,000	29	2,144	2,173	5,760	395	6,155	5,789	2,539
RAILROAD	35,000	75,000	7,238	17,090	24,328	191,208	5,614	196,822	198,446	22,704
STEPTOE	78,000	70,000	7,627	—	7,627	45,923	37,073	82,996	53,550	37,073
CAVE	10,000	2,000	—	2,643	2,643	—	32	32	—	2,675
DRY LAKE (5)	9,000	3,000	2,596	—	2,596	361	—	361	2,957	—
DELAMAR	—	3,000	—	250	250	—	7	7	—	257
LAKE (7)	11,000	17,000	2,828	914	3,742	64,475	965	65,440	67,303	1,879

SUMMARY OF HYDROLOGIC AND WATER RIGHTS DATA

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE - BMO

TABLE
1
1 OF 2

TUBRO NATIONAL, INC.

1. INCLUDES ALKALI SPRING FLAT WHICH IS CONSIDERED PART OF THE BIG SMOKY VALLEY SITING AREA, AND NORTHERN BIG SMOKY HYDROGRAPHIC BASIN WHICH IS NOT A SITING AREA.
 2. INCLUDES STEVEN'S BASIN.
 3. INCLUDES BIG SAND SPRINGS VALLEY.
 4. INCLUDES PART OF REVELLE VALLEY.
 5. INCLUDES MULESHOE VALLEY. (DRY LAKE/MULESHOE)
 6. INCLUDES DELAMAR VALLEY.
 7. INCLUDES PATTERSON VALLEY.
 8. INCLUDES PLEASANT VALLEY.
 9. INCLUDES HAMLIN VALLEY.
 10. HYDROGRAPHIC BASIN WHICH INCLUDES PAHROC VALLEY.
 11. INCLUDED IN VALLEY ESTIMATE FOR NEVADA.
 12. INCLUDES DRY LAKE SUBAREA. (SEVIER/WHIRLWIND)
 13. AVERAGE OF REPORTED RANGE.
- MINOR: MINOR QUANTITY, EITHER LESS THAN 500 ACRE - FEET (0.62 hm³) PER YEAR, OR SMALL COMPARED TO OTHER QUANTITIES IN THE HYDROGRAPHIC AREA.
- NOTE: BASED ON COMMUNICATIONS WITH THE DESERT RESEARCH INSTITUTE, SOME CERTIFICATES AND PROOF NUMBERS WERE REVISED FROM THOSE APPEARING IN APPENDIX A.

VALLEY	HYDROLOGIC DATA, Acre - Ft/Yr		WATER RIGHTS DATA, Acre - Ft/Yr								
	ESTIMATED SURFACE RUNOFF	ESTIMATED GROUND WATER PERENNIAL YIELD	SURFACE WATER			GROUND WATER			SURFACE AND GROUND WATER		
			PERMITS AND APPLICA- TIONS	CERTIFI- CATES AND PROOFS	TOTAL	PERMITS AND APPLICA- TIONS	CERTIFI- CATES AND PROOFS	TOTAL	PERMITS AND APPLICA- TIONS	CERTIFI- CATES AND PROOFS	TOTAL
SPRING	90,000	100,000	63,181	27,194	90,375	43,912	11,825	55,737	107,093	39,019	146,112
SNAKE (8)	58,000	69,000	33,617	19,566	53,183	19,376	3,212	22,588	52,993	22,778	75,771
HAMLIN	—	5,000	4,346	847	5,193	181	181	362	4,527	1,028	5,555
KANE SPRINGS	Minor	Minor	26	83	109	23,659	—	23,659	23,685	83	23,768
WHITE RIVER	26,000	37,000	8,061	45,126	53,187	140,772	11,128	151,900	148,833	56,254	205,087
PAHRANAGAT	< 2,000	25,000	6,876	22,114	28,990	29,722	744	30,466	36,598	22,858	59,456
UTAH:	(11)	(11)	1,336	11,964	13,300	39,945	10,121	50,066	41,281	22,085	63,366
SNAKE	N/A	7,000	2,416	8,995	11,411	17,266	221	17,487	19,682	9,216	28,898
PINE	N/A	32,000	13	2,186	2,199	53	50	103	66	2,236	2,302
TULE	N/A	35,000	3,975	2,602	6,577	831	94	925	4,806	2,696	7,502
FISH SPRINGS - FLAT	N/A	< 12,000	11	—	11	384	423	807	395	423	818
DUGWAY	N/A	24,500	7,903	8,469	16,372	939,993	42,442	982,435	947,896	50,911	998,907
SEVIER DESERT	N/A	58,000	—	30,720	30,720	—	1,100	1,100	—	31,820	31,820
MILFORD	N/A	15,000 ⁽¹³⁾	—	186	186	—	368	368	—	554	554
LUND	N/A	15,000 ⁽¹³⁾	—	124	124	—	—	—	—	124	124
BERYL- ENTERPRISE	N/A	< 10,000	903	251	1,154	32,576	34	32,610	33,479	285	33,764
WAH WAH	(11)	(11)	—	7,262	7,262	—	—	—	—	7,262	7,262
PLEASANT	(11)	(11)	2,909	278	3,187	18,553	411	18,964	21,462	689	22,151
HAMLIN	(11)	(11)	214,922	260,674	475,596	1,951,038	197,097	2,148,135	2,165,960	457,771	2,623,731
TOTAL	> 503,700	± 781,500	214,922	260,674	475,596	1,951,038	197,097	2,148,135	2,165,960	457,771	2,623,731

SUMMARY OF HYDROLOGIC AND
WATER RIGHTS DATA

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE - GMO

TABLE
1
2 OF 2

1. INCLUDES ALKALI SPRING FLAT WHICH IS CONSIDERED PART OF
THE BIG SMOKY VALLEY SITING AREA, AND NORTHERN BIG SMOKY
HYDROGRAPHIC BASIN WHICH IS NOT A SITING AREA.
2. INCLUDES STEVEN'S BASIN.
3. INCLUDES BIG SAND SPRINGS VALLEY.
4. INCLUDES PART OF REVEILLE VALLEY.
5. INCLUDES MULESHOE VALLEY. (DRY LAKE/MULESHOE)
6. INCLUDES DELAMAR VALLEY
7. INCLUDES PATTERSON VALLEY.
8. INCLUDES PLEASANT VALLEY.
9. INCLUDES HAMLIN VALLEY.
10. HYDROGRAPHIC BASIN WHICH INCLUDES PAHROG VALLEY.
11. INCLUDED IN VALLEY ESTIMATE FOR NEVADA.
12. INCLUDES DRY LAKE SUBAREA. (SEVIER/WHIRLWIND)
13. AVERAGE OF REPORTED RANGE.
MINOR: MINOR QUANTITY, EITHER LESS THAN 500 ACRE - FEET
10.62 hm 31 PER YEAR, OR SMALL COMPARED TO OTHER QUANTITIES
IN THE HYDROGRAPHIC AREA.
NOTE: BASED ON COMMUNICATIONS WITH THE DESERT RESEARCH
INSTITUTE, SOME CERTIFICATES AND PROOF NUMBERS WERE REVISED
FROM THOSE APPEARING IN APPENDIX A.

SUMMARY OF HYDROLOGIC AND
WATER RIGHTS DATA

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE - SMO

TABLE
1
2 OF 2

TUGRO NATIONAL, INC.

1. INCLUDES ALKALI SPRING FLAT WHICH IS CONSIDERED PART OF THE BIG SMOKY VALLEY SITING AREA, AND NORTHERN BIG SMOKY HYDROGRAPHIC BASIN WHICH IS NOT A SITING AREA.
 2. INCLUDES STEVEN'S BASIN.
 3. INCLUDES BIG SAND SPRINGS VALLEY.
 4. INCLUDES PART OF REVEILLE VALLEY.
 5. INCLUDES MULESHOE VALLEY. (DRY LAKE/MULESHOE)
 6. INCLUDES DELAMAR VALLEY.
 7. INCLUDES PATTERSON VALLEY.
 8. INCLUDES PLEASANT VALLEY.
 9. INCLUDES HAMLIN VALLEY.
 10. HYDROGRAPHIC BASIN WHICH INCLUDES PAHROC VALLEY.
 11. INCLUDED IN VALLEY ESTIMATE FOR NEVADA.
 12. INCLUDES DRY LAKE SUBAREA. (SEVIER/WHIRLWIND)
 13. AVERAGE OF REPORTED RANGE.
- MINOR: MINOR QUANTITY, EITHER LESS THAN 500 ACRE - FEET (0.62 hm³) PER YEAR, OR SMALL COMPARED TO OTHER QUANTITIES IN THE HYDROGRAPHIC AREA.
- NOTE: BASED ON COMMUNICATIONS WITH THE DESERT RESEARCH INSTITUTE, SOME CERTIFICATES AND PROOF NUMBERS WERE REVISED FROM THOSE APPEARING IN APPENDIX A.

- B. For vested rights, a "proof" may or may not represent a more substantial "water right" than a permit or approved application. However, the proof does represent a claim to historical water use, the legal extent of which must be established through adjudication, and, until such time as adjudication is completed, the claimed usage stands in the records. Thus, for summary purposes, proofs were included with fully certificated legal water rights.

As shown in Table 1, the aggregate ground-water- and surface-water-annual use represented by applications, permits, and proofs and certificates total 2,623,731 acre-ft/yr; the total of surface runoff and perennial ground-water yield in the MX siting area is greater than 1,285,200 acre-ft/yr ($>503,700$ acre-ft/yr surface runoff + about 781,500 acre-ft/yr ground-water perennial yield). If all applications and permits outstanding were to proceed to the certificate stage and if all proofs were to be adjudicated to the claimed use, most of the individual basins would be over appropriated. However, this is very unlikely. In Nevada, for example, about half of the applications that have been filed since filing procedures began in 1905, have been filed within the last four or five years in conjunction with applications under the Carey and Desert Land Entry acts. As such, they are being held in a "Ready for Action" status by the Nevada State Engineer pending release of those lands from the public domain. However, the aggregate total of estimated surface runoff and ground-water perennial yield greatly exceeds the total quantity of surface and ground-water certificates and proofs.

Surface runoff estimates presented in the table are based on precipitation and basin topographic data. As such, they include

all perennial, intermittent, and ephemeral streamflow. However, only perennial and intermittent streams that are supplied by base flow over a significant portion of the year, are likely to be economically recoverable. Therefore, although estimated surface runoff in Nevada exceeds the amount of total surface water applications and appropriations, recoverable surface water is nearly or totally utilized in all basins. This conclusion agrees with surface-water field reconnaissance studies performed by Fugro National. It is anticipated, therefore, that ground water will supply nearly all MX water requirements except where it can be augmented by lease or purchase of surface-water and spring-discharge water rights.

Ground-water rights data summarized in Table 1 indicate that the total amount of ground-water rights in all stages of application and appropriation exceeds the perennial yield in most valleys. As shown, the majority of these rights are in the permits and applications phase; certificates and proofs generally represent less than the perennial ground-water yield in each valley. However, these rights are not static but dynamic. On a daily basis, new applications are received, permits are issued, various proofs are filed, certificates are granted; water rights are bought, leased, or abandoned; and points and manner of diversion and use are changed. Because of the dynamics in the states' water-rights appropriation system it is extremely difficult to determine the exact status of all water rights at any given time. This is especially true with permits which allow the applicant to proceed with diversion of water. In that case, a

certificate is issued after development of a water source only if the development was in accordance with the law and provisions in the permit. However, no attempt is made to update files as to the developmental status between the period a permit is granted and a certificate is issued.

In general, unappropriated ground water is available in basins not "designated" by the state engineer in Nevada or "closed" to further appropriation by the state engineer in Utah. Basins are "designated" by the Nevada State Engineer when the amount of ground water appropriated nears or exceeds the perennial yield. In these areas further appropriations will be considered by the state engineer based on duration, amount, and type of use. In basins "closed" by the Utah State Engineer, further applications for appropriation are generally not being considered.

Although the water rights inventory report does not include any data on specific individual water rights, data on actual ownership and locations of points of diversion and use are contained in a set of working files, one file for each basin. A complete set of these files has been transmitted separately to Fugro National as a supplement to the inventory report.

The water rights inventory is valuable in determining where unappropriated ground water is currently available, identifying potential lessors of ground water; making a preliminary evaluation of the potential for acquiring water from present users either by purchase or lease; and determining whether an effort should be made to file for a new ground-water right for

available unappropriated waters. In the evaluation of present ground-water availability, this inventory should be used in conjunction with the Industry Activity Inventories which include estimates of actual water use in each basin. In most valley areas, the actual water use is considerably less than the ground-water rights associated with all Certificates and Proofs within the valley. The Industry Activity Inventory reports were prepared by the Desert Research Institute and the Utah Water Research Laboratory for Nevada and Utah, respectively. Both reports were submitted to the Ballistic Missile Office under the same cover on 2 September 1980.

APPENDIX A

WATER RIGHTS IN NEVADA AND UTAH:

AN INVENTORY WITHIN THE MX AREA

**WATER RIGHTS IN NEVADA AND UTAH:
AN INVENTORY WITHIN THE MX AREA**

by

G.F. Cochran
D.L. Clark
R.D. Moser
J.W. Bird
J.M. Federici

A Report to Fugro National, Inc.

April 1980

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
1.0 <u>INTRODUCTION</u>	1
2.0 <u>RESULTS AND CONCLUSIONS</u>	3

LIST OF TABLES

Table Number

1 Summary of Hydrologic and Water Rights Data	4,5
---	-----

APPENDIX

APPENDIX

A	Water Rights In Nevada and Utah: An Inventory Within the MX Area
---	---

DISCLAIMER

This water rights inventory summary has not been certified, approved or agreed to by either the State Engineer of Nevada or the State Engineer of Utah or any other agency of either state. All assumptions, interpretations, inferences, conclusions and tabulations are the sole responsibility of the Desert Research Institute.

ACKNOWLEDGEMENT

This inventory could not have been completed without the gracious assistance and advice of personnel in the State Engineer's Offices of Nevada and Utah who guided the DRI personnel through the mazes of water rights records in those offices. They also provided us with access to reports and other documents, and provided us with commentary as to their office procedures and the procedures we were using to analyze the water rights information.

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	ii
DISCLAIMER	iii
ACKNOWLEDGEMENTS	iv
SUMMARY AND CONCLUSIONS	1
SECTION I	
PROCEDURES AND COMMENTARY	7
INTRODUCTION	7
DEFINITIONS AND ORGANIZATION	7
Definition of "Water Rights"	7
Study Area and Subdivisions	9
Organization of Summary	10
DATA SOURCES AND ACQUISITION	13
Hydrologic Data	13
Water Rights Data	15
Nevada	15
Abstract Files	16
Application Status Books	18
Application File Folders/Certificate	19
File Folders	19
Township Cards	19
Proof File	19
Miscellaneous	19
Utah	19
WATER RIGHTS DATA ANALYSIS	21
Assumptions and Interpretations	21
Nevada	21
Stockwatering	23
Irrigation	23
Domestic Municipal and Mining	24
Recreation	24
Wildlife	24
Impoundment	24
Utah	25
Significant Figures and Other Anomalies	25
Significant Figures	25
Overappropriation	26
Reproducibility	27

SECTION II

HYDROGRAPHIC BASIN WATER RIGHT SUMMARIES

NEVADA

N-137 (A&B)	Big Smokey Valley	30
N-139	Kobeh Valley	34
N-140	Monitor Valley	38
N-141	Ralston Valley	41
N-142	Alkali Springs Valley	44
N-143	Clayton Valley	47
N-144	Lida Valley	50
N-145	Stonewall Flat	53
N-146	Sarcobatus Flat	56
N-148	Cactus Flat	60
N-149	Stone Cabin Valley	64
N-150	Little Fish Lake Valley	67
N-151	Antelope Valley	70
N-152	Steven's Basin	73
N-153	Diamond Valley	76
N-154	Newark Valley	79
N-155 (A,B,C)	Little Smoky Valley	83
N-156	Hot Creek	87
N-169	Tikapoo Valley	91
N-170	Penoyer Valley	94
N-171	Coal Valley	97
N-172	Garden Valley	101
N-173 (A,B)	Railroad Valley	105
N-179	Steptoe Valley	109
N-180	Cave Valley	112
N-181	Dry Lake Valley	116
N-182	Delamar Valley	120
N-183	Lake Valley	124
N-184	Spring Valley	127
N-194	Pleasant Valley	130
N-195	Snake Valley	133
N-196	Hamlin Valley	136
N-198	Dry Valley	140
N-199	Rose Valley	144
N-200	Eagle Valley	147
N-201	Spring Valley	150
N-202	Patterson Valley	154
N-203	Panaca Valley	158
N-204	Clover Valley	161
N-205	Lower Meadow Valley Wash	164
N-206	Kane Springs Valley	167
N-207	White River Valley	171
N-208	Pahroc Valley	175
N-209	Pahrnagat Valley	178

UTAH

		<u>Page</u>
U-4	Snake Valley	183
U-5	Pine Valley	186
U-6	White Valley	189
U-7	Fish Springs Flat	192
U-8	Dugway Valley	195
U-9	Government Creek Valley	198
U-46	Sevier Desert	201
U-46 (A)	Dry Lake Subarea	205
U-50	Milford Valley	208
U-52	Lund	211
U-53	Beryl-Enterprise District	214
U-54	Wah Wah Valley	217
U-94	Pleasant Valley	220
U-196	Hamlin Valley	223

HYDROLOGIC DATA REFERENCES	226
----------------------------	-----

APPENDIX	228
----------	-----

LIST OF TABLES

1. Comparative Summary of Hydrologic and Water Rights Data for Nevada and Utah Hydrographic Basins in the MX Area.	2-4
2. Nevada Hydrographic Basins in MX Siting Area	11
3. Utah Hydrographic Basins in MX Siting Area	12
4. Nevada Beneficial Use Rules of Thumb	22
5. Utah Beneficial Use Rules of Thumb	25

LIST OF FIGURES AND PLATES

1. Facsimile of Nevada Division of Water Resources ABSTRACT FORM	17
Plate I (in pocket) Nevada Hydrographic Basins	
Plate II (in pocket) Utah Hydrographic Basins	

SUMMARY AND CONCLUSIONS

During the period from mid-December 1979 to late February 1980 an examination was made of the water rights records of the State Engineer of Nevada to determine water right owners of record within the MX area and to determine the extent of those rights. Inventory was accomplished according to legal status of "water rights" i.e. Application to Appropriate (not a water right), Permit to Appropriate (not a water right), Proof of Appropriation (a claimed vested water right) and Certificate (a legal water right). For purposes of this summary report these were grouped as "Permits and Applications" and "Certificates and Proofs". Section II of this report summarizes these "water rights" for 44 individual hydrographic basins together with estimated hydrologic data. The basin summaries are presented according to source of water (ground or surface), type of ownership and type of use. For some basins supplementary explanatory notes are also provided.

Water right records of the State Engineer of Utah were examined for the same purposes during January 1980 and again in March 1980. Comparable legal status classifications were used to summarize the Utah information which is presented in the tabulations of Section II under the same group headings as used for Nevada, i.e. "Permits and Applications" and "Certificates and Proofs".

The Nevada and Utah water rights data inventoried are summarized in Table 1 by hydrographic basin according to source of water and water right legal status. Also shown is estimated water availability. All these data are for annual use expressed in acre-feet per year.

The data examined in Nevada represent a total of approximately 3476 water right files and in Utah approximately 1834 water right files. In Nevada approximately 1581 files fall in the "Permit and Applications" category and approximately 1895 are in the "Certificate and Proof" category. In Utah the category totals are respectively 1065 and 819.

TABLE 1. Comparative Summary of Hydrologic and Water Rights Data for Nevada and Utah Hydrographic Basins in the MX Area

Basin Number	Hydrologic Data, AF/Y			Surface Water			Groundwater			Surface and Groundwater		
	Estimated Surface Runoff	Estimated Groundwater Perennial Yield	Total	Permits and Applications	Certificates and Proofs	Total	Permits and Applications	Certificates and Proofs	Total	Permits and Applications	Certificates and Proofs	Total
N-137(A,B)	43,300	71,000	30,484	14,939	24,909	30,484	114,666	14,997	129,663	129,603	39,906	169,511
N-139	N/A	15,000	723	--	--	723	1,337	12,615	13,952	2,060	12,615	14,675
N-140	N/A	18,000	21,732	11,274	10,458	21,732	30,071	266	30,337	41,365	10,724	52,069
N-141	10,000	5,000	8,845	8,693	162	8,845	52,519	1,276	53,795	61,202	1,438	62,640
N-142	400	3,000	658	362	296	658	817	17,460	18,277	1,179	17,756	18,935
N-143	3,500	22,000	4	--	4	4	130	--	130	130	4	134
N-144	1,600	350	5,260	1,679	3,581	5,260	2,958	35	2,993	4,637	3,616	8,253
N-145	400	100	194	194	--	194	--	--	--	194	--	194
N-146	N/A	3,000	9	9	--	9	3,207	--	3,207	3,216	--	3,216
N-148	N/A	300	1,279	1,203	76	1,279	1,600	--	1,600	2,803	76	2,879
N-149	9,700	2,000	1,568	1,050	518	1,568	29,620	3,897	35,517	30,670	4,415	35,085
N-150	38,000	10,000	2,980	--	2,980	2,980	23	--	23	23	2,980	3,003
N-151	N/A	4,000	1,519	--	1,519	1,519	1,320	993	2,313	1,320	2,512	3,832
N-152	N/A	200	52	52	--	52	36	--	36	88	--	88
N-153	5,900	30,000	11,833	3,146	8,687	11,833	25,142	116,898	142,040	28,288	125,585	153,873
N-154	N/A	18,000	141	35	106	141	24,939	--	24,939	24,974	106	25,080
N-155(A,B,C)	5,500	6,100	10,702	831	9,871	10,702	12,802	174	12,976	13,633	10,045	23,678
N-156	8,000	5,500	19,915	18,865	1,050	19,915	25,293	3,813	29,106	44,150	4,863	49,021
N-169	N/A	4,300	48	4	44	48	--	--	--	4	44	48
N-170	1,000	4,000	2,374	2,212	162	2,374	36,153	15,164	51,317	38,365	15,326	53,691

Table 1 (contd.)

Basin Number	Hydrologic Data, AF/Y		Water Rights Data, AF/Y				Surface and Groundwater			
	Estimated Surface Runoff	Estimated Groundwater Interennial Yield	Surface Water		Groundwater		Surface and Groundwater		Certificates and Proofs	Total
			Permits and Applications	Certificates and Proofs	Total	Permits and Applications	Certificates and Proofs	Total		
N-171	N/A	6,000	5	184	189	6,515	--	6,515	6,704	--
N-172	N/A	6,000	29	2,145	2,174	5,760	795	6,555	5,789	2,940
N-173	26,000	75,000	7,238	17,000	24,238	191,208	4,910	196,118	198,446	22,000
N-179	78,000	70,000	7,627	--	7,627	45,923	37,073	82,996	53,550	37,073
N-180	N/A	2,000	--	5,837	5,837	--	32	32	--	5,869
N-181	N/A	2,500	2,596	--	2,596	361	--	361	2,957	--
N-182	N/A	3,000	--	250	250	--	7	7	--	257
N-183	N/A	12,000	1,347	--	1,347	57,463	--	57,463	58,810	--
N-184	90,000	100,000	63,181	27,124	90,305	43,912	11,451	55,363	107,093	38,645
N-184	1,500	1,500	240	1,350	1,590	4,320	273	4,593	4,560	1,626
N-195	38,000	80,000	33,377	48,213	81,590	15,056	2,939	17,995	48,433	21,152
N-196	400	5,000	4,346	847	5,193	181	181	362	4,527	1,028
N-198	1,000	1,000	--	--	--	4,102	4,825	8,927	4,102	4,825
N-199	100	100	--	--	--	--	2,440	2,440	--	2,440
N-200	4,400	30,000	--	--	--	1,642	248	1,890	1,642	248
N-201	5,700	1,000	--	825	825	4,818	198	5,016	4,818	1,023
N-202	3,300	4,500	1,481	914	2,395	7,012	965	7,977	8,493	1,879
N-203	400	9,000	1,472	2,685	4,157	25,138	13,795	38,933	26,610	16,480
N-204	40	1,000	19	--	19	5,154	28	5,182	5,173	28
N-205	300	5,000	15	515	530	168,845	12,374	181,219	168,860	12,889
N-206	150	Minor	26	83	109	23,659	--	23,659	23,665	83
N-207	26,000	37,000	8,061	42,954	51,015	140,772	31,577	172,349	143,833	74,531

Table 1 (contd.)

Basin Number	Hydrologic Data, AF/Y		Surface Water			Groundwater			Surface and Groundwater		
	Estimated Surface Runoff	Estimated Groundwater Perennial Yield	Permits and Applications	Certificates and Proofs	Total	Permits and Applications	Certificates and Proofs	Total	Permits and Applications	Certificates and Proofs	Total
N-203	1,800	21,000	16	62	78	2,028	18	2,046	2,044	80	2,124
N-209	59,800	25,000	6,876	22,114	28,990	29,722	744	30,466	36,598	22,858	59,456
Subtotal Nevada	>461,690	>721,430	203,213	207,689	410,901	1,146,206	312,461	1,458,667	1,349,621	519,965	1,869,585
U-4	N/A	37,500(1)	1,336	11,964	13,300	39,945	10,121	50,066	41,281	22,065	63,346
U-5	N/A	<5,000	2,416	8,995	11,411	17,266	221	17,487	19,682	9,216	28,698
U-6	N/A	<5,000	13	2,186	2,199	53	50	103	66	2,236	2,302
U-7	N/A	37,500(1)	3,975	2,602	6,577	831	94	925	4,806	2,696	7,502
U-8	N/A	15,000(1)	11	--	11	384	423	807	395	423	818
U-9	N/A	15,000(1)	2	1,476	1,478	27,507	5,558	33,065	27,509	7,034	34,543
U-25	N/A	>100,000	4,239	8,458	12,697	929,134	42,374	971,508	933,373	50,832	984,205
U-46(A)	N/A	15,000(1)	3,664	11	3,675	10,859	68	10,927	14,523	79	14,602
U-50	N/A	37,500(1)	--	30,720	30,720	--	1,100	1,100	--	31,820	31,820
U-52	N/A	15,000(1)	--	186	186	--	368	368	--	554	554
U-53	N/A	15,000(1)	--	124	124	--	--	--	--	124	124
U-54	N/A	<5,000	903	251	1,154	32,576	34	32,610	33,479	285	33,764
U-194	N/A	<5,000	--	7,262	7,262	--	--	--	--	7,262	7,262
U-196	N/A	15,000(1)	2,909	278	3,187	18,553	411	18,964	21,462	689	22,151
Subtotal Utah	N/A	>322,500	19,468	74,513	93,981	1,077,108	60,822	1,137,930	1,096,576	135,135	1,231,911
Total	>461,690	>1,043,930	222,681	282,201	504,882	2,223,314	373,283	2,596,597	2,446,197	655,300	3,101,497
(1) Average of reported range.											

(1) Average of reported range.

There are two components missing from the Nevada water rights inventory. The first of these are private domestic wells, which under Nevada law are not required to have a permit. The number of domestic wells in the inventory area is unknown. While the aggregate annual water taken by domestic wells is not believed to be significant, interference with those wells by new water diversions could be a relatively serious problem - especially for the well owners. The second component consists of vested rights for which a Proof of Appropriation has never been filed, or the claim was filed at an early date in the county courthouse but never with the State Engineer. No attempt was made to inventory unfiled claims. A check was made in the Lincoln County Courthouse records and some claims were located, but a complete inventory was not made. It is believed that while many claims exist in the courthouses they primarily represent small spring flows and the aggregate quantity of water involved is relatively small. This belief is also held by personnel in the Nevada State Engineer's Office.

No attempt was made to determine whether any unfiled Diligence Claims existed in Utah. Domestic wells, however, are included.

This report does not include any data on specific individual water rights. Data on actual ownership and locations of points of diversion and use are contained in a set of working files - one file for each basin. A complete set of these files is being transmitted separately to Fugro National as a supplement to this report. With regard to data in working files several points must be made:

1. Ownership is listed as found in the latest record available in the State Engineer's Offices and no attempt was made to develop assignment histories. Furthermore many addresses are incomplete or out of date, but again no attempt was made to either complete or update them.
2. No attempt was made to determine whether applications had been made or approved for changes in type of use, place or use or point of diversion.

3. In cases where records were incomplete no attempt was made to complete those records by investigating other data sources other than as is explained in Section I of this report.
4. The "Basin Abstract" forms provided in each working file represent a first distillation of the raw data found in the State Engineer's Offices. For the Utah files copies of some of the raw data are included.

This entire water rights inventory project represents work done by faculty of the Desert Research Institute. All assumptions, interpretations, inferences, conclusions, and tabulations are their's alone and do not in any token represent a certification, approval or agreement by either the State Engineer of Nevada or the State Engineer of Utah or any other agency of either state.

SECTION I

PROCEDURES AND COMMENTARY

INTRODUCTION

A major concern expressed by many Nevada and Utah residents about the MX System has been that of water requirements and water rights. Given that both states are arid, water availability has played a significant role in how and where economic development has occurred. The scarcity and variability of occurrence of water in both states lead each to adopt the "Appropriative Doctrine" of water rights. Development and application of water law in Nevada and Utah were discussed at length in a report on the first phase of this project.¹

At the time that the proposal was made to undertake a "comprehensive" survey of water rights within the Nevada and Utah MX area, it was the investigators' perception that there was a relatively small and manageable number of rights involved. However, in Nevada, instead of finding a small handful or so of "rights" in each valley, as many as 390 in a single valley were encountered. In Utah that number approached 1500 in the Delta area. Because of the large number of "water rights" in the MX area and the limited time and financial resources with which conduct the inventory, it is less than comprehensive in nature. However, the inventory is thorough and relatively accurate and thus should be useful as a planning resource. Weaknesses and strengths of the inventory are discussed in the following sections.

DEFINITIONS AND ORGANIZATION

Definition of "Water Rights"

For lack of a better term, "water right" is being used here for discussion purposes to encompass a spectrum of distinct steps or circumstances involved with the legal acquisition of the property right in Nevada and Utah known as "a water right".

¹ Bird, J.W. and G.F. Cochran, 1979, "Overview of Nevada and Utah Water Law: Historical Development and Current Procedures for Rights Acquisition", Water Resources Center, Desert Research Institute, Reno, NV.

Under the Nevada law, for water rights acquired subsequent to passage of the law, the first step is to submit an Application. This establishes a priority date and if the application is approved, a Permit may be issued which allows proceeding with diversion of the water. If the water is developed in accordance with the law and provisions in the permit then a Certificate is issued. This certificate is the legal water right. For water that was in use at the time the water law was passed (vested rights) a different procedure is used. These users file a Proof of Appropriation which claims that a certain amount of water has historically been used. The actual vested water right must then be determined by adjudication.

In Utah the situation is very similar though some of the terminology is slightly different e.g. a Nevada "Proof" and a Utah "Diligence Claim" both relate to vested rights.

In both the Nevada and Utah State Engineer Offices when a party makes application to appropriate water a permanent file is created. The contents of that file change with time as the applicant proceeds with development of the legal water right. With vested rights the file is initiated by submission of the Proof or Diligence Claim. Thus at any given instant in time the State Engineers' records are composed of files that may contain among other documents:

1. An Application: That may: be pending further action; have been approved; have been rejected; be under protest; have been rejected and is under appeal, etc.
2. A Permit: that allows the party to proceed with an approved application under conditions prescribed with the approval.
3. A Proof: that claims historical beneficial use or vested rights (Diligence Claim in Utah).
4. A Certificate: that establishes the legal status of "a water right".

To effect a summary of the water rights inventory the above four items were grouped as 1) Applications and Permits, and 2) Proofs (of appropriation) and Certificates. Rationale for this grouping was as follows:

- A. Neither an application nor a permit represents a perfected water right. However, an Application does establish a priority date and should it be approved and all conditions be met, could eventually become a valid water right. The Permit (or Approved Application) represents an intermediate stage of somewhat more substance in that the applicant has authority to proceed with those steps necessary for perfecting the water right.
- B. For vested rights a "Proof" may or may not represent a more substantial "water right" than a Permit or Approved Application. However, the Proof does represent a claim to historical water use, the legal extent of which must be established through adjudication, and until such time as adjudication is completed the claimed usage stands in the records. Thus, for summary purposes, Proofs were included with fully Certificated legal water rights.

Since neither the Nevada or Utah water right records are in a computerized data storage and retrieval system, and given the number of water right files, the time constraints for this project, and financial limitations, it was impossible to develop any more refined legal status than represented by these two categories.

Study Area and Subdivisions

The area for which water rights were inventoried was defined on the basis of a map provided by Fugro National to Desert Research in October 1979. Within Nevada the study boundaries were broadened to include the entirety of each hydrographic basin of which any portion was included within the MX boundaries. The MX boundaries, as provided by Fugro National, and the Nevada study region are shown here on Plate I.

Summary of all Nevada water rights was done on a basin by basin basis. The basin numbers and names are those defined on the Nevada State Hydrographic Basin Map as published by the Nevada Department of Conservation and Natural Resources. The Nevada State Engineer's Office uses these same basin numbers and names to summarize and organize water right records. All the Nevada basins are coincident with those defined in USGS Professional Paper 813G.¹ The Nevada basins for which inventories have been prepared are listed in Table 2 together with an indication of those basins that have been "designated" under provisions of the Nevada water law. The "designated" status provides the State Engineer with additional authorities in managing water resources of the basin.

In Utah definition of summary units was a little more difficult. To maintain hydrologic consistency for both states it was decided to utilize the hydrographic basins as defined in USGS Professional Paper 813-G. These basins do not have one-to-one correspondence to "water right areas" as defined and utilized by the Utah State Engineer's Office. The USGS hydrographic basins in Utah are shown on Plate II with the MX boundaries as provided by Fugro National. Table 3 lists the basin names and numbers with current restrictions and Utah area designations. Using the hydrographic basin approach provided hydrologic consistency, but complicated the inventory process by requiring a geographic check on each "water right". Some errors may have been introduced in this process but they are not believed to be significant.

More importantly, in Utah only those portions of each hydrographic basin included within the MX area as defined in Plate II were inventoried. Time and funds precluded using the broader approach as used in Nevada.

Organization of Summary

The summary inventory tables included in Section II of this report are organized by hydrographic basin. Within each basin there are four components:

¹ Eakin, T.E., D. Price and J.R. Harrill, 1976, "Summary Appraisals of the Nation's Ground-Water Resources - Great Basin Region", U.S. Geological Survey Prof. Paper 813-G, USGPO, Washington, D.C.

TABLE 2

Nevada Hydrographic Basins in MX Siting Area

<u>Basin Name</u>	<u>Basin No.</u>	⁽¹⁾
1. Big Smoky	N-137(A&B)	B Designated
2. Koebe Valley	N-139	
3. Monitor Valley	N-140(A&B)	
4. Raiston Valley	N-141	
5. Alkali Spring Valley	N-142	
6. Clayton Valley	N-143	
7. Lida Valley	N-144	
8. Stonewall Flat	N-145	
9. Sarcobatus Flat	N-146	
10. Cactus Flat	N-148	
11. Stone Cabin Valley	N-149	Designated
12. Little Fish Lake Valley	N-150	
13. Antelope Valley	N-151	
14. Stevens Basin	N-152	
15. Diamond Valley	N-153	Designated
16. Newark Valley	N-154	
17. Little Smoky	N-155(A,B&C)	
18. Hot Creek Valley	N-156	
19. Tikapoo Valley	N-169(A)	
20. Penoyer Valley (aka Sand Springs Valley)	N-170	Designated
21. Coal Valley	N-171	
22. Garden Valley	N-172	
23. Railroad Valley	N-173(A&B)	
24. Steptoe Valley	N-179	Designated
25. Cave Valley	N-180	
26. Dry Lake Valley	N-181	
27. Delamar Valley	N-182	
28. Lake Valley	N-183	Designated
29. Spring Valley	N-184	
30. Pleasant Valley	N-194	
31. Snake Valley	N-195	
32. Hamlin Valley	N-196	
33. Dry Valley	N-198	
34. Rose Valley	N-199	
35. Eagle Valley	N-200	
36. Spring Valley	N-201	
37. Patterson Valley	N-202	
38. Panaca Valley	N-203	
39. Clover Valley	N-204	
40. Lower Meadow Valley Wash	N-205	
41. Kane Springs Valley	N-206	
42. White River Valley	N-207	
43. Pahroe Valley	N-208	
44. Pahrnagat Valley	N-209	

(1) Basin Nos are those defined on the State of Nevada Hydrographic Basin Map published by the Nevada Department of Conservation and Natural Resources. All the basins listed here are shown on Plate I.

TABLE 3

Utah Hydrographic Basins in MX Siting Area

<u>Basin Name</u>	<u>Use Area No.</u> ⁽²⁾	<u>Basin No.</u> ⁽¹⁾
1. Snake Valley	18	U-4
2. Pine Valley	18	U-5
3. White Valley	18, 69	U-6
4. Fish Springs Flat	18	U-7
5. Dugway Valley	16	U-8
6. Government Creek Valley	16	U-9
7. Sevier Desert ⁽³⁾	67, 68, 71	U-46
8. Dry Lake Subarea ⁽⁴⁾	68, 69	U-46(A)
9. Milford Valley ⁽³⁾	71	U-50
10. Lund District ⁽³⁾	71	U-52
11. Beryl-Enterprise District ⁽³⁾	71	U-53
12. Wah Wah	69	U-54
13. Pleasant Valley	17	U-194
14. Hamlin Valley	19	U-196

(1) Hydrographic Basin numbers are those defined in USGS Professional Paper 813-G.

(2) Areas defined by the Utah State Engineer for administratively processing and filing water rights.

(3) Permits to pump groundwater either not being issued, being issued with limitations, or being issued for preferred purposes only (as of 1973).

(4) Permits to pump additional groundwater are subject to priorities of existing surface water uses (true in all areas but highly pertinent here).

1. Hydrologic Summary: This represents the best available estimates of water supply as published in various documents. Sources for the estimates are noted.
2. Water Rights by Legal Status: This summary presents separately the "water rights" to surface water and groundwater for each of the two classifications. For each "right" class the number of "rights", the total diversion rate in cubic feet per second and the annual use in acre-feet per year are given.
3. Water Rights by Ownership: This summary presents the combined Application, Permit, Certificate and Proof data for groundwater and surface water for each of six (6) ownership categories. Included are the number of "rights", diversion rate and annual use.
4. Water Rights by Type of Use: This summary is similar to that for Ownership, but instead displays the data in terms of eight (8) use categories.

DATA SOURCES AND ACQUISITION

Hydrologic Data

For each hydrographic basin an attempt was made to provide estimates of five hydrologic parameters:

1. Annual Surface Water Runoff,
2. Annual Natural Groundwater Recharge,
3. Annual Natural Groundwater Discharge
4. Perennial Groundwater Yield, and
5. Transitional Storage Reserve

The first parameter is an indication of the streamflow potentially available. The second and third parameters (recharge and discharge) taken together are an indication of the "goodness" of a basin's water budget which in turn is reflected in the fourth

parameter, Perennial Yield. The fifth parameter, Transitional Storage Reserve (TSR), is an estimate of how much groundwater must be removed from storage to develop the Perennial Yield.

Transitional Storage Reserve was defined by Worts as:¹

"... the quantity of water in storage in a particular ground-water reservoir that can be extracted and beneficially used during the transition period between equilibrium conditions in a state of nature and new equilibrium conditions under the perennial-yield concept of ground-water development. In the arid environment of the Great Basin, the transitional storage reserve of such a reservoir is the amount of stored water available for withdrawal by pumping during the nonequilibrium period of development, or period of lowering water levels. Obviously, transitional storage reserve is a specific part of the total ground-water resource that can be taken from storage; it is water that is available in addition to the recharge."

For Nevada the primary sources of data were reports in the "Water Resources Reconnaissance Series" as published by the Nevada State Engineers Office. These reports were supplemented by "Water Resources Bulletins" and "Water Resources Planning Reports" also published by that office. Each hydrologic summary lists by code the specific data source(s), e.g. B41, B35, WPR3. A complete list of codes and report titles are presented following the basin summaries.

For Utah the primary data sources were USGS Professional Paper 813-G and the State of Utah Department of Natural Resources Technical Publications. Few Technical Publications have been completed in the MX area and thus the Utah hydrologic data are not as complete as for Nevada (see Appendix).

¹Worts, G.F., 1967, "The Available Water Supply" in Rush, R.E. and P.A. Glancy, "Water-resource Appraisal of the Warm Springs, Lemmon Valley Area, Washoe County, Nevada", Nevada Dept. Cons. and Nat. Res., Water Resources-Reconnaissance Ser. Rpt. 43, p. 48-53.

Not all of the hydrologic parameters were available for all the basins. However, because of project limitations no attempt was made to provide independent estimates for the missing parameters. A great deal more hydrologic data exist in the source documents, but it is difficult to summarize briefly. Additionally, the TSR parameter was introduced into the Nevada Reconnaissance Series in Report No. 43 and thus was not available for basins covered by earlier reports. Related data, i.e. volume of groundwater in storage per foot of saturated sediment, are available but were not included because there is not a one-to-one conversion to the TSR concept.

The authors of this inventory deliberately have avoided drawing any independent hydrologic conclusions or making any hydrologic inferences for any basin. We have simply reported the conclusions and inferences of others and as such take no stand as to the adequacy, completeness or correctness of the studies that led to those numbers.

Water Rights Data

Nevada

All the Nevada water rights data were compiled from records maintained by the Office of State Engineer, Nevada Division of Water Resources in Carson City. Primary data compilation occurred during the period of December 15, 1979 - January 15, 1980. Supplementary compilation occurred during the latter part of February 1980 to fill gaps and answer questions raised during data reduction and analysis.

Water rights are not static but dynamic. On a daily basis new applications are received, permits are issued, various proofs are filed, certificates are granted; waters rights are bought, leased, or abandoned; points and manner of diversion and use are changed. This inventory represents the situation as it existed during the above listed period. Not included in the inventory are the approximately 820 applications filed with the Nevada State Engineer between January 1, 1980 and March 31, 1980, of which

approximately 265 were in counties to be directly impacted by MX. It is unknown how many or which "rights" moved from application to permit status or permit to certificate status during this same period. Information sources at the Nevada Division of Water Resources which were utilized in the compilation of Water Rights Summaries were as follows:

1. Abstract files
2. Application Status Books
3. Application file folders/Certificate file folders
4. Township cards
5. Proof files
6. Miscellaneous; adjudications, field reports, etc.

Abstract Files - Water rights in most of Nevada's 232 hydrologic basins have at one time or other been summarized by the Division of Water Resources personnel. These summaries or "Abstracts" are filed in a common location. Because these abstracts were compiled by different people, at different times and for different purposes they differ greatly in completeness and perhaps in accuracy. In general once an abstract has been made it is not periodically updated to reflect changes in the status of water rights or addition of new rights. They are updated only on an as needed basis, generally associated with protests. Abstracts, if complete, contain the following information: Source, (underground or surface) Basin Name and Number, Date of Abstract, Application Number/Permit Number, Certificate Number, Owner of Record, Date of Priority, Point of Diversion, Rate of Diversion (cfs), Duty (AF/year), Use, Place of Use, and Remarks. A facsimile of the "Abstract of Water Filings" form as developed by the Division of Water Resources is shown in Figure 1. The actual forms are in an 8½" x 14" format. These forms were used in this inventory as an intermediate compilation tool for both Nevada and Utah data. In most cases for existing abstracts some or all of the

information in either the diversion rate, or duty column or both was missing and had to be estimated or calculated. For example if no duty were shown and the remarks column indicated that 160 acres were being irrigated then the duty was calculated on the basis of 4 feet per acre per year (or 5 feet in southern townships). Estimation techniques and assumptions are more fully explained in a following section. Since abstracts contain information only up to a given date (from about 6 months to 6 years prior to this inventory) they had to be updated by reference to the Application Status book.

Application Status Books - All applications for permits to appropriate water are given a number and entered numerically in the Application Status Book. This book is kept up to date on a daily basis and includes information such as the application number, date of filing application, the name and number of the hydrologic basin in which the water is to be diverted, and the dates on which various proofs are filed, permits and certificates are granted, dates of legal advertisement, etc. Rates of diversion, duties and annual rights, type of use etc., are not shown. In order to update an abstract it is necessary to begin at the application/permit number of the last entry on the abstract and proceed forward in the Application Status books to the current date listing all of the application numbers for the particular basin. Once these application numbers are listed, together with the date of filing (priority date) and owner of record and a check has been made to see that the application has not been withdrawn canceled or denied, one can proceed to the file room and obtain the application file folder. Approximately half of the applications that have been filed since filing procedures began in 1905 have been filed within the last 4 or 5 years. This is in part due to Desert Land Entry and Carrey Act applications. Therefore, abstracts only a year or so old required considerable updating. There are also a large number of applications on which action has not yet been taken.

Application File Folders/Certificate file folders - A folder is established for each application as it is received by the Division. All notices, proofs, permits, and correspondence pertaining to the application are filed in this folder. These records are usually the best and most complete source of information (once the appropriate folder has been located). At any given time several thousand of these folders may be signed out to various other locations within the office where they are somewhat difficult to obtain.

Township cards - The Division keeps a file of township cards, one for each township in the state. (Size approximately 12" to 12" ea). When an application is accepted by the office the location of the point of diversion and the place of use plotted on these cards. These cards can be used to determine the number and location of rights in a given area. These are not the best source of the information sought in this inventory because the cards are not always up to date and because the information is by township, not hydrologic basin.

Proof file - The proof file and the proof status book are difficult to use because entries are not filed by basin and one must know either the proof number, owner of record, name of source, or township, range and section location.

Miscellaneous - There are several other sources of information available at the Division of Water Resources office which were used for some basins. They include adjudications, filed reports, and personal comments from staff members. Official copies of all Proofs of Appropriation (Claims of vested rights), Permits, and Certificates are kept in leather bound volumes in the office safe. These records are not as complete and up to date as the Application file, however, they can be used if files cannot be located.

Utah

The State Engineer's Office has divided Utah into 45 areas for processing and filing water rights. These areas seldom coincide with the 60 hydrographic basins

defined by USGS in the state. These areas have been grouped into seven (7) field or "area offices". Those offices and the areas that they administer within the MX boundaries are:

<u>State Engineer's Areas</u>	<u>Area Office Location</u>
16, 17, 18	Salt Lake City
67, 68	Salina
69, 71	Cedar City

All paperwork pertinent to a particular right, from application to certification, are filed in the State Engineer's Office, Salt Lake City. A file is contained in a manila-type folder, grouped by area and stored on shelves in one room. Office workers can directly and easily remove the files, and as they are removed an outcard is inserted in its place. It is estimated that about 1 or 2 percent of the files were not available and had been replaced by outcards when the files were searched by DRI.

As applications are received by the State Engineer's Office they are located on plats and assigned an application number. When a file is made-up, a file number is assigned to the application number. File-application numbers are placed into books according to whether it is a surface water or a groundwater application. Thus, if one were to locate a groundwater right on a plat with its assigned application number, one could then locate the file number, and hence the file, by using the cataloged cross reference.

Many of the applications, and particularly the claims, were prepared by the individuals involved. Many of these are quite old. Usually they referred to a rate but not amount. But quite often the intended use would be listed, such as one family 0.25 acres irrigation, 25 sheep, 10 hogs, etc.

About 3,500 files were searched. Data were tape recorded for small flow rates (domestic, stock) and copied for the larger ones (irrigation, municipal, mining, geothermal). Copying efforts were slow and laborious, and only those rights within the MX area were copied or recorded.

WATER RIGHTS DATA ANALYSIS

Assumptions and Interpretations

As has been indicated, water rights in Nevada and Utah are in a continuous state of flux and this inventory represents the situation encountered during those periods DRI personnel were actually in the State Engineer's Offices of Nevada and Utah. Moreover, the water right data that reside in the files have been accumulating for over half a century. During this time the law has continued to evolve, administrative rules and regulations have changed, forms and office procedures have changed, and importantly, personnel have changed. As a consequence the type, manner and completeness of data recorded have changed. Thus, the process of reducing water right information contained in thousands of recorded instruments to a manageable and comprehensible state required exercise of considerable engineering judgement and interpretation. For example, how does one translate "3.2 cfs supplemental groundwater" to an annual irrigation water use, or "73 acres irrigated by spring flow" to either a diversion rate or annual use?

The assumptions made in this inventory are not certified by, agreed to, or approved by, either the State Engineer of Nevada or the State Engineer of Utah. However, all of the critical assumptions have been discussed with personnel from both those offices and to the maximum possible extent the procedures developed and used in those offices have been followed. For both States, the underlying principle that "Beneficial use shall be the basis, the measure and the limit of the right to the use of water" (NRS 533.035 and UCA 73-1-3) was adhered to.

Nevada

For purposes of granting permits and determining extent of beneficial use, the personnel in the Nevada Division of Water Resources use an internal working guide

listing appropriate "rules of thumb".¹ These rules, an abstract of which is given in Table 4, were followed whenever possible, but in all instances maximum available data were used to derive either or both the diversion rate or annual use. Further specific assumptions and procedures used are discussed in the following paragraphs. In all instances, if they were available, calculations made by the State Engineer's Office were given preference over DRI calculations based on the rules of thumb.

TABLE 4
Nevada Beneficial Use Rules of Thumb

Irrigation: Amounts of Water Allowed on Permits

5.4 cfs	for	320 acres
4.7 cfs	"	280 "
4.0 cfs	"	240 "
3.4 cfs	"	200 "
2.7 cfs	"	160 "
2.4 cfs	"	120 "
1.7 cfs	"	80 "
1.0 cfs	"	40 "

Diversion x 1.983 x Days = Ac-ft per season

Duty for North Townships = 4 Ac-ft/ac/year

Duty for South Township = 5 Ac-ft/ac/year

Stock Watering: Duties

Cattle and Horses - 20 gpd = 0.00003125 cfs/head

Sheep - 4 gpd = 0.00000625 cfs/head

In some instances there was no information available as to the extent of an applied for water use. In these few cases the application was included under the appropriate use and ownership but with no associated diversion rate or annual use.

¹This guide is referred to as the "Permit Terms Book" which is periodically amended by the State Engineer or Office Engineer. All personnel handling applications and permits have a copy of this guide.

Submittal of a deficient application establishes a priority date for the applicant provided additional data are provided within the time allowed to "correct" a "deficient" application.

Many "water rights" specify more than one type of water use, e.g., Irrigation and Stock, Irrigation and Domestic, Mining and Domestic, Stock and Wildlife, etc. In Nevada applications are limited to one source for one purpose, however individual domestic use may be included in any application with the other named use. In some cases this rule has not been enforced. In Utah an application can include more than one use. Most applications in Utah, therefore, specify several uses (ie, irrigation, stock watering, domestic). It is also common in Utah that water for residential landscape is included as irrigation water unlike in Nevada where it is considered as a component of domestic use. In all instances an attempt was made to categorize a "water right" on the basis of its primary use. In Nevada, secondary use (generally domestic) is usually minor compared to the primary use. In Utah the uses often tend to be more nearly equal.

Stockwatering - It was assumed that stockwatering, unless otherwise specified is a year-round requirement and thus if only a diversion rate were known the annual use in acre-feet was estimated at $724 \frac{\text{ac-ft/yr}}{\text{cfs}} \times \text{Diversion rate (cfs)}$. If both the diversion rate and number of head were known, the annual use was calculated with the rule of thumb. In only the number of head were known, both the diversion rate and annual use were calculated by the rule of thumb.

Irrigation - Unless sufficient data were available to modify water needs either upward or downward it was assumed that irrigation requirement was determined by climate and growing season only as reflected in established duties, i.e. soil conditions, water quality, and crop type were not considered. In each basin the first step was to examine certificated irrigation rights listed on the abstract to determine, if possible, the average

per acre diversion rate and annual duty. These numbers were given precedence over the rules of thumb to estimate missing data. If a calculated annual use, based on duty and known acreage, exceeded $724 \times$ diversion rate in cfs, the annual use was reduced to the annual volumetric equivalent of the diversion rate with the implicit assumption that storage was available to accomplish this. In instances where supplemental groundwater rights were listed, the combined surface and groundwater diversion rates were summed, but the annual use was limited by the prevailing duty and acreage.

Domestic, Municipal and Mining - It was assumed that all of these water uses are year-around propositions and thus the annual use was calculated at $724 \times$ diversion rate in cfs. In most instances there were no data available to warrant any other calculations. However, if there were they were always used.

Recreation - Most recreation uses were associated with surface impoundments and storage rights. Storage rights were summed in the annual use column but not in the diversion rate since most storage rights come from flows in excess of existing rights. For instream recreation, i.e., fisheries, the diversion rate was summed, but no annual use was calculated unless specific information was available to allow otherwise.

Wildlife - Most wildlife water use is for water fowl habitat and for deer and other large animals. It was assumed that these are year-around uses and thus the annual use was calculated at $724 \times$ diversion rate in cfs.

Impoundment - Storage rights were assessed by using the impounded area, if available, and the annual evaporation rate.

Utah

As in Nevada, the Utah State Engineer's Office uses rule of thumb in determining beneficial uses when an application is approved. These "rules of thumb" were discussed with personnel in the State Engineer's Office as to how they are applied. Table 5 is a listing of these. Whenever beneficial uses were specifically stated the annual use was calculated using the values in Table 5. Whenever flow rates only were applied for, or claimed, beneficial uses were assessed by judgement based upon the available facts.

TABLE 5
Utah Beneficial Use Rules of Thumb

Irrigation

1 cfs per 60 acres for water from wells
Duty ranges from 3 to 5 ac-ft/ac/yr

Stockwater

Cattle and horses - 25 gpd/head
Sheep, goats and swine - 5 gpd/head
Poultry - 0.75 gpd/bird

Domestic and Household

650 gpd per family

Significant Figures and Other Anomalies

Significant Figures

One of the first things that college physics professors attempt to teach engineering students is the meaning and use of significant figures. Reference to any one of the "Hydrologic" and "Water Rights by Legal Status Summary" sheets will show that hydrologic data are given only to the nearest hundred or thousand (sometimes

10,000) acre feet, annual water use is given to the nearest acre foot and water right rates are given to the nearest 10^{-3} to 10^{-6} cfs. Why the disparity?

The hydrologic data are rounded to reflect lack of detailed knowledge of actually how much water is available on an average basis. Water rights are precisely defined quantities generally expressed in cubic feet per second though often in terms of gallons per minute. A water right for 10 gpm equals 0.022283+ cfs. Frequently small gpm rights are expressed in the water right documents in terms of their cfs equivalent to the nearest 10^{-6} cfs. Given the number of approximations made to reduce the water rights data to the point shown in the Section II summary tables it may seem ludicrous to present sums to eight significant figures. This was done primarily to show that very small quantities of water are the subject of valid water rights. The water rights annual use figures are a compromise between representations of legal "fact" and hydrologic uncertainty and are the products of conversion of a "precise" rate to a derived quantity in different units.

Overappropriation

In many basins, particularly in Nevada, the aggregate groundwater and surface water annual use represented by Applications, Permits, Proofs and Certificate exceeds the estimated available water supply. If all applications and permits outstanding were to proceed to the Certificate stage and if all Proofs were to be adjudicated to the claimed use then these basins would truly be overappropriated. However, such is not likely to be the case. In most of these valleys the greatest significant volumes of water are associated with Applications for groundwater development. These Applications predominantly have been made in conjunction with applications under the Carey and Desert Land Entry Acts. As such they are being held in a "Ready for Action" status by the Nevada State Engineering pending release of those lands from the public domain. For example in basin N-173, Railroad Valley, the surface runoff plus perennial yield total only 101,000 af/y but the combined applications, permits, proofs and certificates

total 220,446 af/y. However, of this, 198,446 af/y are in the permit and application status. It seems unlikely that the State Engineer would do other than follow the State Water Law and thus would certificate water rights only to the approximate natural annual replenishment rate.

Reproducibility

A great deal of individual judgement was required in calculating values not shown on water rights forms. Since others attempting to reproduce these values might place differing degrees of importance on the various data available they would not necessarily end up with the same figures. Differences, however, should not be great. Since the process of filing for water rights has been in existence for about 75 years many different laws, regulations, policies and personal interpretation thereof have been in force in the State Engineer's Office. In calculating missing values for this inventory an attempt was made to consider both current procedures and historic procedures and to utilize the value which would most likely prevail if the right were to be reviewed by the State Engineer or the Court.

There are inconsistencies and anomalies in many water rights. For example in a Nevada valley containing both north and south townships there might be some crop acreage entitled to 4 feet of water per acre per year while adjacent crop acreage might be entitled to 5 feet per acre per year. In the same valley there may also be land entitled to 1.9 feet per acre per year based upon a no longer used duty for uncultivated natural pasture. In calculating a missing annual use in this valley one would have to consider the location of the place of use, the year that the right was granted, the original manner of use, etc.

Uncertainties were encountered in interpreting some rights. For example, a water right for mining and milling use or for industrial use might specify a large diversion rate. One could assume that some of the diverted water would be consumed and some returned to the surface and/or groundwater system. When the mining, milling

or industrial process was known a return flow was estimated and only the consumptive use included in the "Use" total. When no process information was known the entire amount of water diverted was considered to be consumed.

Uncertainties also were encountered with municipal supplies where the diversion rate was specified and no annual use figures were given. In these cases the specified rate was applied year round to obtain the annual use. This was done because it was believed that the system storage would handle some use variation and that investment in pumping equipment would probably not be much greater than absolutely necessary.

SECTION II
HYDROGRAPHIC BASIN WATER
RIGHT SUMMARIES

State Nevada

Basin Name Big Smoky Valley

Basin No. N-137 (A,B)

Location: From T 1S to T 20N and R 37E to R 46E

*Estimated Annual Surface Water Runoff 43,300 AFY

*Estimated Annual Natural Groundwater Recharge 79,000 AFY

*Estimated Annual Natural Groundwater Discharge 78,000 AFY

*Estimated Perennial Groundwater Yield 71,000 AFY

*Estimated Transitional Storage Reserve 5,200,000 AF

*Source WPR3, B41

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>36</u>	<u>39.031</u>	<u>14,939</u>
Certificates & Proofs	<u>49</u>	<u>162.191925</u>	<u>24,909</u>
Total Surface Water	<u>85</u>	<u>201.222925</u>	<u>39,848</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>146</u>	<u>521.294</u>	<u>114,666</u>
Certificates & Proofs	<u>61</u>	<u>68.39741</u>	<u>14,997</u>
Total Groundwater	<u>207</u>	<u>589.69141</u>	<u>129,663</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>182</u>	<u>560.325</u>	<u>129,605</u>
Certificates & Proofs	<u>110</u>	<u>230.589335</u>	<u>39,906</u>
Total G&S	<u>292</u>	<u>790.914335</u>	<u>169,511</u>

State Nevada

Basin Name Big Smoky Valley Basin No. N-137 (A,B)

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	75	196.888725	37,145
State Government	3	0.82	743
Local Governmental Entities	2	2.8	1,443
Special Districts	1	0.7	507
Native American	--	--	--
Federal Government	<u>4</u>	<u>0.0142</u>	<u>10</u>
Total	85	201.222925	39,848

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	204	584.06141	128,425
State Government	1	0.06	43
Local Governmental Entities	1	5.57	1,194
Special Districts	1	0	0
Native American	--	--	--
Federal Government	<u>--</u>	<u>--</u>	<u>--</u>
Total	207	589.69141	129,663

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	279	780.950135	165,570
State Government	4	0.88	786
Local Governmental Entities	3	8.5	2,637
Special Districts	2	0.7	507
Native American	--	--	--
Federal Government	<u>4</u>	<u>0.0142</u>	<u>10</u>
Totals	292	790.914335	169,511

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Big Smoky Valley Basin No. N-137 (A,B)

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	4	3.1	2,244
Domestic	4	1.4422	460
Stock	15	0.745725	540
Irrigation	49	184.867	28,448
Mining	5	7.755	5,609
Recreation	--	--	--
Wildlife	--	--	--
Other	<u>8</u>	<u>3.313</u>	<u>2,547</u>
Totals	85	201.222925	39,848

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	7	7.27446	1,247
Domestic	5	0.4128	76
Stock	27	0.83765	199
Irrigation	149	544.692	114,565
Mining	18	36.3745	13,572
Recreation	1	0.1	4
Wildlife	--	--	--
Other	<u>--</u>	<u>--</u>	<u>--</u>
Totals	207	589.69141	129,663

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	11	10.37446	3,491
Domestic	9	1.855	536
Stock	42	1.583375	739
Irrigation	198	729.559	143,013
Mining	23	44.1295	19,181
Recreation	1	0.1	4
Wildlife	--	--	--
Other	<u>8</u>	<u>3.313</u>	<u>2,547</u>
Totals	292	790.914335	169,511

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Big Smokey Valley

Basin No. N-137(A&B)

NOTES:

1. The surface water "Certificate and Permit" annual use totals do not include water used under Certificate No. 356 which allows a diversion rate of 91.73 cfs. The certificate itself and the diversion rate are included in other sums i.e. numbers and rates for private ownership and irrigation.

State Nevada

Basin Name Kobeh Valley

Basin No. N-139

Location: From T 17N to T 23 1/2N and R 46E to R 52E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 17,000 AFY

*Estimated Annual Natural Groundwater Discharge 15,000 AFY

*Estimated Perennial Groundwater Yield 16,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R30

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>14</u>	<u>1.8421</u>	<u>723</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>14</u>	<u>1.8421</u>	<u>723</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>5</u>	<u>1.8465</u>	<u>1,337</u>
Certificates & Proofs	<u>16</u>	<u>54.0601</u>	<u>12,615</u>
Total Groundwater	<u>21</u>	<u>55.9065</u>	<u>13,952</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>19</u>	<u>3.6885</u>	<u>2,060</u>
Certificates & Proofs	<u>16</u>	<u>54.0601</u>	<u>12,615</u>
Total G&S	<u>35</u>	<u>57.7486</u>	<u>14,675</u>

State Nevada

Basin Name Kobeh Valley

Basin No. N-139

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	14	1.8421	723
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	14	1.8421	723

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	21	55.9065	13,952
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	21	55.9065	13,952

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	35	57.7486	14,675
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	35	57.7486	14,675

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Kobeh Valley

Basin No. N-139

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	13	0.2421	163
Irrigation	1	1.6	560
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	14	1.8421	723

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	6	0.0666	48
Irrigation	15	55.8399	13,904
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	21	55.9065	13,952

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	19	0.3087	211
Irrigation	16	57.4399	14,464
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	35	57.7486	14,675

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Kobeh Valley

Basin No. N-139

NOTES:

1. This was one of the first basins summarized. Irrigation duty was assumed to be 3.5 ac-ft/ac based on length of growing season and amounts allowed for early certificates. A 4 ac-ft/ac duty would increase the certificated groundwater irrigation annual use by approximately 1154 ac-ft/year and permitted surface water irrigation by 80 ac-ft/year.

State Nevada

Basin Name Monitor Valley

Basin No. N-140

Location: From T 8N to T 18N and R 45E to R 49E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 21,300 AFY

*Estimated Annual Natural Groundwater Discharge 17,200 AFY

*Estimated Perennial Groundwater Yield 18,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R30

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>10</u>	<u>39.0953</u>	<u>11,274</u>
Certificates & Proofs	<u>27</u>	<u>36.1984</u>	<u>10,458</u>
Total Surface Water	<u>37</u>	<u>75.2937</u>	<u>21,732</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>19</u>	<u>84.9910</u>	<u>30,071</u>
Certificates & Proofs	<u>7</u>	<u>2.1556</u>	<u>266</u>
Total Groundwater	<u>26</u>	<u>87.1466</u>	<u>30,337</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>29</u>	<u>124.0863</u>	<u>41,345</u>
Certificates & Proofs	<u>34</u>	<u>38.3540</u>	<u>10,724</u>
Total G&S	<u>63</u>	<u>162.4403</u>	<u>52,069</u>

State Nevada

Basin Name Monitor Valley Basin No. N-140

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	34	75.2615	21,720
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>3</u>	<u>.0322</u>	<u>12</u>
Total	37	75.2937	21,732

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	26	87.1466	30,337
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>--</u>	<u>--</u>	<u>--</u>
Total	26	87.1466	30,337

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	60	162.4081	52,057
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>3</u>	<u>.0322</u>	<u>12</u>
Totals	63	162.4403	52,069

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Monitor Valley

Basin No. N-140

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	3	.0060	3
Stock	10	5.0855	1,786
Irrigation	22	69.1519	19,643
Mining	--	--	--
Recreation	2	1.0503	300
Wildlife	--	--	--
Other	--	--	--
Totals	37	75.2937	21,732

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	7	.1866	113
Irrigation	10	66.2000	15,075
Mining	9	20.7600	15,149
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	26	87.1466	30,337

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	3	.0060	3
Stock	17	5.2721	1,899
Irrigation	32	135.3519	34,718
Mining	9	20.7600	15,149
Recreation	2	1.0503	300
Wildlife	--	--	--
Other	--	--	--
Totals	63	162.4403	52,069

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Ralston Valley

Basin No. N-141

Location: From T 2S to T 9N and R 42E to R 47E

*Estimated Annual Surface Water Runoff 10,000 AFY
 *Estimated Annual Natural Groundwater Recharge 8,000 AFY
 *Estimated Annual Natural Groundwater Discharge 8,000 AFY
 *Estimated Perennial Groundwater Yield 6,000 AFY
 *Estimated Transitional Storage Reserve N/A AF
 *Source WPR3, R12, R45

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>12.86</u>	<u>8,683</u>
Certificates & Proofs	<u>15</u>	<u>.2875</u>	<u>162</u>
Total Surface Water	<u>22</u>	<u>13.1475</u>	<u>8,845</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>34</u>	<u>219.8813</u>	<u>52,519</u>
Certificates & Proofs	<u>11</u>	<u>1.7978</u>	<u>1,276</u>
Total Groundwater	<u>45</u>	<u>221.6791</u>	<u>53,795</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>41</u>	<u>232.7413</u>	<u>61,202</u>
Certificates & Proofs	<u>26</u>	<u>2.0853</u>	<u>1,438</u>
Total G&S	<u>67</u>	<u>234.8266</u>	<u>62,640</u>

State Nevada

Basin Name Ralston Valley Basin No. N-141

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	22	13.1475	8,845
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	22	13.1475	8,845

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	42	219.1808	51,988
State Government	-	-	-
Local Governmental Entities	3	2.4983	1,807
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	45	221.6791	53,795

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	64	232.3283	60,833
State Government	-	-	-
Local Governmental Entities	3	2.4983	1,807
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	67	234.8266	62,640

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Ralston Valley

Basin No. N-141

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	14	.6665	380
Irrigation	5	1.721	685
Mining	3	10.760	7,780
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	22	13.1475	8,845

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	2.4983	1,807
Domestic	1	0.05	36
Stock	12	1.0808	716
Irrigation	29	218.05	51,236
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	45	221.6791	53,795

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	2.4983	1,807
Domestic	1	0.05	36
Stock	26	1.7473	1,096
Irrigation	34	219.771	51,921
Mining	3	10.760	7,780
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	67	234.8266	62,640

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Alkali Springs Valley

Basin No. N-142

Location: From T 3S to T 2N and R 40E to R 43E

*Estimated Annual Surface Water Runoff 400 AFY

*Estimated Annual Natural Groundwater Recharge 5,500 AFY

*Estimated Annual Natural Groundwater Discharge 5,500 AFY

*Estimated Perennial Groundwater Yield 3,000 AFY

*Estimated Transitional Storage Reserve 80,000 AF

*Source WPR3, R45

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>.5</u>	<u>362</u>
Certificates & Proofs	<u>10</u>	<u>.40931</u>	<u>296</u>
Total Surface Water	<u>11</u>	<u>.90931</u>	<u>658</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>3.2829</u>	<u>817</u>
Certificates & Proofs	<u>22</u>	<u>24.117</u>	<u>17,460</u>
Total Groundwater	<u>28</u>	<u>27.3999</u>	<u>18,277</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>3.7829</u>	<u>1,179</u>
Certificates & Proofs	<u>32</u>	<u>24.5263</u>	<u>17,756</u>
Total G&S	<u>39</u>	<u>28.30921</u>	<u>18,935</u>

State Nevada

Basin Name Alkali Springs Valley Basin No. N-142

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	10	.65931	477
State Government	--	--	--
Local Governmental Entities	1	.25	181
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	11	.90931	658

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	14	12.3174	8,032
State Government	1	1.0	50
Local Governmental Entities	13	14.0825	10,195
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	28	27.3999	18,277

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	24	12.97671	8,509
State Government	1	1.0	50
Local Governmental Entities	14	14.3325	10,376
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	39	27.30921	18,935

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Alkali Springs Valley Basin No. N-142

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	4	.3795	275
Domestic	1	.01	7
Stock	5	.01981	14
Irrigation	--	--	--
Mining	1	.50	362
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	11	.90931	658

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	18	24.807	17,959
Domestic	--	--	--
Stock	6	.0704	51
Irrigation	3	1.5225	217
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	1	1.0	50
Totals	28	27.3999	18,277

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	22	25.1865	18,234
Domestic	1	.01	7
Stock	11	.09021	65
Irrigation	3	1.5225	217
Mining	1	.50	362
Recreation	--	--	--
Wildlife	--	--	--
Other	1	1.0	50
Totals	39	28.30921	18,955

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Clayton Valley

Basin No. N-143

Location: From T 5S to T 2N and R 37E to R 41E

*Estimated Annual Surface Water Runoff 3,500 AFY

*Estimated Annual Natural Groundwater Recharge 19,500 AFY

*Estimated Annual Natural Groundwater Discharge 24,000 AFY

*Estimated Perennial Groundwater Yield 22,000 AFY

*Estimated Transitional Storage Reserve 450,000 AF

*Source WPR3, R45

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>1</u>	<u>.005</u>	<u>4</u>
Total Surface Water	<u>1</u>	<u>.005</u>	<u>4</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>.1829</u>	<u>130</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>2</u>	<u>.1829</u>	<u>130</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>.1829</u>	<u>130</u>
Certificates & Proofs	<u>1</u>	<u>.005</u>	<u>4</u>
Total G&S	<u>3</u>	<u>.1879</u>	<u>134</u>

State Nevada

Basin Name Clayton Valley Basin No. N-143

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	1	.005	4
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	1	.005	4

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	.1829	130
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	2	.1829	130

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	3	.1879	134
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	3	.1879	134

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Clayton Valley Basin No. N-143

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	1	.005	4
Totals			

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	.1829	130
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	2	.1829	130

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	.1829	130
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	1	.005	4
Totals	3	.1879	134

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Lida Valley

Basin No. N-144

Location: From T 3S to T 7S and R 40E to R 44E

*Estimated Annual Surface Water Runoff 1,600 AFY

*Estimated Annual Natural Groundwater Recharge 700 AFY

*Estimated Annual Natural Groundwater Discharge 700 AFY

*Estimated Perennial Groundwater Yield 350 AFY

*Estimated Transitional Storage Reserve 600,000 AF

*Source WPR3, R45

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>8</u>	<u>2.3225</u>	<u>1,679</u>
Certificates & Proofs	<u>19</u>	<u>4.92288</u>	<u>3,581</u>
Total Surface Water	<u>27</u>	<u>7.24538</u>	<u>5,260</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>4.0914</u>	<u>2,958</u>
Certificates & Proofs	<u>5</u>	<u>.0535</u>	<u>35</u>
Total Groundwater	<u>11</u>	<u>4.1449</u>	<u>2,993</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>14</u>	<u>6.41390</u>	<u>4,637</u>
Certificates & Proofs	<u>24</u>	<u>4.97639</u>	<u>3,616</u>
Total G&S	<u>38</u>	<u>11.39028</u>	<u>8,253</u>

State Nevada

Basin Name Lida Valley Basin No. N-144

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	26	7.19538	5,224
State Government	--	--	--
Local Governmental Entities	1	.05	36
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	27	7.24538	5,260

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	11	4.1449	2,993
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	11	4.1449	2,993

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	37	11.34028	8,217
State Government	--	--	--
Local Governmental Entities	1	.05	36
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	38	11.39028	8,253

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Lida Valley

Basin No. N-144

III. WATER RIGHTS BY TYPE USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	10	3.8966	2,821
Domestic	2	1.0	724
Stock	10	0.21378	154
Irrigation	2	.035	42
Mining	3	2.10	1,519
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	27	7.24538	5,260

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	723
Domestic	1	.005	3
Stock	7	.1399	98
Irrigation	--	--	--
Mining	2	3.0	2,169
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	11	4.1449	2,993

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	11	4.8966	3,544
Domestic	3	1.005	727
Stock	17	.35368	252
Irrigation	2	.035	42
Mining	5	5.10	3,688
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	38	11.39028	8,253

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Stonewall Flat

Basin No. N-145

Location: From T 1S to T 5S and R 43E to R 47E

*Estimated Annual Surface Water Runoff 400 AFY
*Estimated Annual Natural Groundwater Recharge 100 AFY
*Estimated Annual Natural Groundwater Discharge 200 AFY
*Estimated Perennial Groundwater Yield 100 AFY
*Estimated Transitional Storage Reserve 350,000 AF

*Source WPR3, R45

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>0.2689</u>	<u>194</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>2</u>	<u>0.2689</u>	<u>194</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>--</u>	<u>--</u>	<u>--</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>0.2689</u>	<u>194</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total G&S	<u>2</u>	<u>0.2689</u>	<u>194</u>

State Nevada

Basin Name Stonewall Flat Basin No. N-145

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	2	0.2689	194
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
	<u>2</u>	<u>0.2689</u>	<u>194</u>

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	--	--	--
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	--	--	--

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	0.2689	194
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	<u>2</u>	<u>0.2689</u>	<u>194</u>

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Stonewall Flat Basin No. N-145

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	0.2689	194
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	2	0.2689	194

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	--	--	--

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	0.2689	194
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	2	0.2689	194

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Sarcobatus Flat

Basin No. N-146

Location: From T 5S to T 12S and R 42E to R 47E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 2,500 AFY

*Estimated Annual Natural Groundwater Discharge 3,500 AFY

*Estimated Perennial Groundwater Yield 3,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R54

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>.0125</u>	<u>9</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>1</u>	<u>.0125</u>	<u>9</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>4</u>	<u>13.51</u>	<u>3,207</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>4</u>	<u>13.51</u>	<u>3,207</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>5</u>	<u>13.5225</u>	<u>3,216</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total G&S	<u>5</u>	<u>13.5225</u>	<u>3,216</u>

State Nevada

Basin Name Sarcobatus Flat Basin No. N-146

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	1	.0125	9
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	1	.0125	9

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	4	13.51	3,207
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	4	13.51	3,207

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	13.5225	3,216
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	5	13.5225	3,216

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Sarcobatus Flat

Basin No. N-146

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	.0125	9
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	1	.0125	9

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	.01	7
Irrigation	3	13.50	3,200
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	4	13.51	3,207

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	.0225	16
Irrigation	3	13.50	3,200
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	13.5225	3,216

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Sarcobatus Flat

Basin No. N-146

NOTES:

1. Sarcobatus Flat is discussed hydrologically as a component of the following regional flow systems and not as an individual basin in R54:

- Ash Meadows Groundwater System
- Pahute Mesa Groundwater System
- Sarcobatus Flat Groundwater System

State Nevada

Basin Name Cactus Flat

Basin No. N-148

Location: From T 4S to T 1N and R 46E to R 50E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 600 AFY

*Estimated Annual Natural Groundwater Discharge 600 AFY

*Estimated Perennial Groundwater Yield 300 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R54, WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>1.80</u>	<u>1,203</u>
Certificates & Proofs	<u>4</u>	<u>0.105</u>	<u>76</u>
Total Surface Water	<u>7</u>	<u>1.905</u>	<u>1,279</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.552</u>	<u>1,600</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>1</u>	<u>0.552</u>	<u>1,600</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>4</u>	<u>2.352</u>	<u>2,803</u>
Certificates & Proofs	<u>4</u>	<u>0.105</u>	<u>76</u>
Total G&S	<u>8</u>	<u>2.457</u>	<u>2,879</u>

State Nevada

Basin Name Cactus Flat Basin No. N-148

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	7	1.905	1,279
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	7	1.905	1,279

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.552	1,600
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	1	0.552	1,600

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	8	2.457	2,879
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	8	2.457	2,879

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Cactus Flat Basin No. N-148

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	6	1.605	1,160
Irrigation	1	.30	119
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	7	1.805	1,279

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	1	0.5519	1,600
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	1	0.5519	1,600

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	6	1.605	1,160
Irrigation	2	0.852	1,719
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	8	2.457	2,879

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Cactus Flat

Basin No. N-148

NOTES:

1. Cactus Flat, as part of the Sarcobatus Flat groundwater system, is discussed hydrologically as a component of the following regional flow systems and not as an individual basin in R54:

- Ash Meadows Groundwater System
- Pahute Mesa Groundwater System
- Sarcobatus Flat Groundwater System

State Nevada

Basin Name Stone Cabin Valley

Basin No. N-149

Location: From T 2S to T 9N and R 45E to R 50E

*Estimated Annual Surface Water Runoff 9,700 AFY

*Estimated Annual Natural Groundwater Recharge 5,000 AFY

*Estimated Annual Natural Groundwater Discharge 5,000 AFY

*Estimated Perennial Groundwater Yield 2,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R12, R45

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>19</u>	<u>1.848</u>	<u>1,050</u>
Certificates & Proofs	<u>9</u>	<u>1.151</u>	<u>518</u>
Total Surface Water	<u>28</u>	<u>2.999</u>	<u>1,568</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>29</u>	<u>123.66</u>	<u>29,620</u>
Certificates & Proofs	<u>8</u>	<u>11.2169</u>	<u>3,897</u>
Total Groundwater	<u>37</u>	<u>134.8769</u>	<u>35,517</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>48</u>	<u>125.5080</u>	<u>30,670</u>
Certificates & Proofs	<u>17</u>	<u>12.3679</u>	<u>4,415</u>
Total G&S	<u>65</u>	<u>137.8759</u>	<u>35,085</u>

State Nevada

Basin Name Stone Cabin Valley Basin No. N-149

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	27	2.9790	1,567
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>.02</u>	<u>1</u>
Total	28	2.9990	1,568

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	35	134.8336	33,490
State Government	1	.0033	2
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>.04</u>	<u>25</u>
Total	37	134.8769	33,517

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	62	137.8126	35,057
State Government	1	.0033	2
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>2</u>	<u>.06</u>	<u>26</u>
Totals	65	137.8759	35,085

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Stone Cabin Valley Basin No. N-149

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	.0223	16
Domestic	--	--	--
Stock	22	1.4105	956
Irrigation	5	1.5662	596
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	28	2.9990	1,568

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	.0033	2
Stock	8	.2536	154
Irrigation	28	134.6200	33,361
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	37	134.8769	33,517

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	.0223	16
Domestic	1	.0033	2
Stock	30	1.6641	1,110
Irrigation	33	136.1862	33,956
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	65	137.8759	35,085

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Little Fish Lake Valley

Basin No. N-150

Location: From T 2N to T 14N and R 42N to R 51N

*Estimated Annual Surface Water Runoff 38,000 AFY

*Estimated Annual Natural Groundwater Recharge 11,000 AFY

*Estimated Annual Natural Groundwater Discharge 10,200 AFY

*Estimated Perennial Groundwater Yield 10,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>11</u>	<u>4.1164</u>	<u>2980</u>
Total Surface Water	<u>11</u>	<u>4.1164</u>	<u>2980</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.032</u>	<u>23</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>1</u>	<u>0.032</u>	<u>23</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.032</u>	<u>23</u>
Certificates & Proofs	<u>11</u>	<u>4.1164</u>	<u>2980</u>
Total G&S	<u>12</u>	<u>4.1484</u>	<u>3003</u>

State Nevada

Basin Name Little Fish Lake Valley Basin No. N-150

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	11	4.1164	2980
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
	<u>11</u>	<u>4.1164</u>	<u>2980</u>

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.032	23
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	<u>1</u>	<u>0.032</u>	<u>23</u>

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	12	4.1484	3003
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	<u>12</u>	<u>4.1484</u>	<u>3003</u>

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Little Fish Lake Valley Basin No. N-150

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	10	0.1164	84
Irrigation	1	4.0	2896
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	11	4.1164	2980

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	0.032	23
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	1	0.032	23

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	11	0.1484	107
Irrigation	1	4.0	2896
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	12	4.1484	3003

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Antelope Valley

Basin No. N-151

Location: From T 14N to T 19N and R 49E to R 52E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 4,100 AFY

*Estimated Annual Natural Groundwater Discharge 4,200 AFY

*Estimated Perennial Groundwater Yield 4,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R30

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>65</u>	<u>4.9106</u>	<u>1,519</u>
Total Surface Water	<u>65</u>	<u>4.9106</u>	<u>1,519</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>5.4</u>	<u>1,320</u>
Certificates & Proofs	<u>16</u>	<u>3.6866</u>	<u>993</u>
Total Groundwater	<u>17</u>	<u>9.0866</u>	<u>2,313</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>5.4</u>	<u>1,320</u>
Certificates & Proofs	<u>81</u>	<u>8.5972</u>	<u>2,512</u>
Total G&S	<u>82</u>	<u>13.9972</u>	<u>3,832</u>

State Nevada

Basin Name Antelope Valley Basin No. N-151

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	65	4.9106	1,519
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	65	4.9106	1,519

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	17	9.0866	2,313
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	17	9.0866	2,313

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	82	13.9972	3,832
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	82	13.9972	3,832

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Antelope Valley

Basin No. N-151

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	54	.8465	513
Irrigation	11	4.0641	1,006
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	65	4.9106	1,519

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	9	.2316	118
Irrigation	8	8.855	2,195
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	17	9.0866	2,313

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	63	1.0781	630
Irrigation	19	12.9191	3,201
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	82	13.9972	3,832

¹These totals include all Applications, Permits, Certificates and Proofs.

AD-A112 434

FUGRO NATIONAL INC LONG BEACH CA

F/G 7/4

MX SITING INVESTIGATION. WATER RIGHTS INVENTORY, NEVADA-UTAH. W-ETC(U)

DEC 80

F04704-80-C-0006

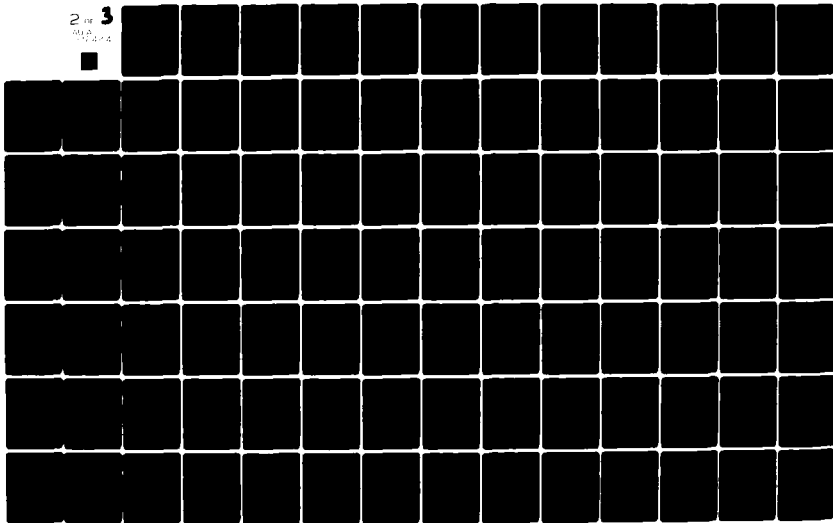
UNCLASSIFIED

FN-80-DEC-1

ML

2 of 3
010 1 1 4

3



A
2 4 3

State Nevada

Basin Name Steven's Basin

Basin No. N-152

Location: From T 18N to T 19N and R 52E to R 53E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 200 AFY

*Estimated Annual Natural Groundwater Discharge 200 AFY

*Estimated Perennial Groundwater Yield 200 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R30

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.072</u>	<u>52</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Surface Water	<u>1</u>	<u>.072</u>	<u>52</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.05</u>	<u>36</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>1</u>	<u>.05</u>	<u>36</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>0.122</u>	<u>88</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total G&S	<u>2</u>	<u>0.122</u>	<u>88</u>

State Nevada

Basin Name Steven's Basin Basin No. N-152

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	1	0.072	52
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	1	0.072	52

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.05	36
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	1	0.05	36

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	0.122	88
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	2	0.122	88

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Steven's Basin Basin No. N-152

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	1	.072	52
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>1</u>	<u>.072</u>	<u>52</u>

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	1	.05	36
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>1</u>	<u>.05</u>	<u>36</u>

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	2	.122	88
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>2</u>	<u>.122</u>	<u>88</u>

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Diamond Valley

Basin No. N-153

Location: From T 18N to T 27N and R 51E to R 55E

*Estimated Annual Surface Water Runoff 5,900 AFY

*Estimated Annual Natural Groundwater Recharge 30,000 AFY

*Estimated Annual Natural Groundwater Discharge 30,000 AFY

*Estimated Perennial Groundwater Yield 30,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R6, B35

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>26</u>	<u>58.775</u>	<u>3,146</u>
Certificates & Proofs	<u>98</u>	<u>34.5726</u>	<u>8,687</u>
Total Surface Water	<u>124</u>	<u>93.3476</u>	<u>11,833</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>46</u>	<u>150.5986</u>	<u>25,142</u>
Certificates & Proofs	<u>220</u>	<u>636.1871</u>	<u>116,898</u>
Total Groundwater	<u>266</u>	<u>786.7857</u>	<u>142,040</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>72</u>	<u>209.3736</u>	<u>28,288</u>
Certificates & Proofs	<u>318</u>	<u>670.7597</u>	<u>125,585</u>
Total G&S	<u>390</u>	<u>880.1333</u>	<u>153,873</u>

State Nevada

Basin Name Diamond Valley Basin No. N-153

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	124	93.3476	11,833
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	124	93.3476	11,833

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	265	786.6757	142,006
State Government	--	--	--
Local Governmental Entities	1	0.11	34
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	266	786.7857	142,040

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	389	880.0233	153,839
State Government	--	--	--
Local Governmental Entities	1	0.11	34
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	389	880.1333	153,873

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Diamond Valley Basin No. N-153

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	10	1.10	796
Domestic	--	--	--
Stock	67	2.2015	812
Irrigation	41	88.2241	9,231
Mining	5	1.80	978
Recreation	--	--	--
Wildlife	--	--	--
Other	1	0.022	16
Totals	124	93.3476	11,833

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	4	1.950	1,412
Domestic	--	--	--
Stock	21	1.0597	759
Irrigation	234	774.2660	133,815
Mining	6	9.40	6,020
Recreation	--	--	--
Wildlife	--	--	--
Other	1	0.11	34
Totals	266	786.7857	142,040

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	14	3.0500	2,208
Domestic	--	--	--
Stock	88	3.2612	1,571
Irrigation	275	862.4901	143,046
Mining	11	11.2000	6,998
Recreation	--	--	--
Wildlife	--	--	--
Other	2	0.1320	50
Totals	390	880.1333	153,873

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Newark Valley

Basin No. N-154

Location: From T 16N to T 24N and R 54E to R 58E

*Estimated Annual Surface Water Runoff N/A AFY
*Estimated Annual Natural Groundwater Recharge 18,000 AFY
*Estimated Annual Natural Groundwater Discharge 16,000 AFY
*Estimated Perennial Groundwater Yield 18,000 AFY
*Estimated Transitional Storage Reserve N/A AF
*Source R1

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>4</u>	<u>0.07</u>	<u>35</u>
Certificates & Proofs	<u>2</u>	<u>0.351114</u>	<u>106</u>
Total Surface Water	<u>6</u>	<u>0.421114</u>	<u>141</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>33</u>	<u>123.7003</u>	<u>24,939</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>33</u>	<u>123.7003</u>	<u>24,939</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>37</u>	<u>123.7703</u>	<u>24,974</u>
Certificates & Proofs	<u>2</u>	<u>0.351114</u>	<u>106</u>
Total G&S	<u>39</u>	<u>124.121414</u>	<u>25,080</u>

State Nevada

Basin Name Newark Valley Basin No. N-154

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	6	0.421114	141
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	6	0.421114	141

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	33	123.7003	24,939
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	33	123.7003	24,939

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	39	124.121414	25,080
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	39	124.121414	25,080

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Newark Valley

Basin No. N-154

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	5	0.071114	36
Irrigation	1	0.35	105
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	6	0.421114	141

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	6	0.1003	69
Irrigation	26	116.1	19,440
Mining	1	7.5	5,430
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	33	123.7003	24,939

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	11	0.171414	105
Irrigation	27	116.45	19,545
Mining	1	7.5	5,430
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	39	124.121414	25,080

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Newark Valley

Basin No. N-154

NOTES:

1. This was one of the first basins summarized. Irrigation duty was assumed to be 3 ac-ft/ac based on length of growing season. If the 4 ac-ft/ac duty rule of thumb for north townships is used the Permitted groundwater irrigation annual use would be approximately 6480 ac-ft/yr greater and surface water Proof irrigation would be 35 ac-ft/yr greater. All irrigation is in private ownership.

State Nevada

Basin Name Little Smoky Valley

Basin No. N-155(A,B,C)

Location: From T 6N to T 18N and R 51E to R 55E

*Estimated Annual Surface Water Runoff 5,500 AFY

*Estimated Annual Natural Groundwater Recharge 5,600 AFY

*Estimated Annual Natural Groundwater Discharge 2,900 AFY

*Estimated Perennial Groundwater Yield 6,100 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>1.1373</u>	<u>831</u>
Certificates & Proofs	<u>101</u>	<u>22.2517</u>	<u>9,871</u>
Total Surface Water	<u>104</u>	<u>23.3890</u>	<u>10,702</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>14</u>	<u>21.3160</u>	<u>12,802</u>
Certificates & Proofs	<u>9</u>	<u>.7934</u>	<u>174</u>
Total Groundwater	<u>23</u>	<u>22.1094</u>	<u>12,976</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>17</u>	<u>22.4533</u>	<u>13,633</u>
Certificates & Proofs	<u>110</u>	<u>23.0451</u>	<u>10,045</u>
Total G&S	<u>127</u>	<u>45.4984</u>	<u>23,678</u>

State Nevada

Basin Name Little Smoky Valley Basin No. N-155(A,B,C)

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	103	23.2790	10,622
State Government	-	-	-
Local Governmental Entities	1	0.1100	80
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	104	23.3890	10,702

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	22	22.0934	12,964
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	1	.0160	12
Federal Government	-	-	-
Total	23	22.1094	12,976

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	125	45.3724	23,586
State Government	-	-	-
Local Governmental Entities	1	.1100	80
Special Districts	-	-	-
Native American	1	.0160	12
Federal Government	-	-	-
Totals	127	45.4984	23,678

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Little Smoky Valley Basin No. N-155(A,B,C)

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	0.2100	152
Domestic	1	4.0000	1,280
Stock	90	2.8142	1,622
Irrigation	10	15.3648	6,924
Mining	1	1.0000	724
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	104	23.3890	10,702

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	10	.8094	186
Irrigation	6	18.2000	10,548
Mining	7	3.1000	2,242
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	23	22.1094	12,976

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	.2100	152
Domestic	1	4.0000	1,280
Stock	100	3.6236	1,808
Irrigation	16	33.5648	17,472
Mining	8	4,1000	2,966
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	127	45.4984	23,678

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Little Smokey Valley

Basin No. N-155

NOTES:

1. A total of 4 groundwater permits for mining use were undefined in terms of duty or rate. They are included in the Permit enumeration but not the Rate or Annual Use totals.
2. One surface water Permit was totally undefined and thus not included at all.

State Nevada

Basin Name Hot Creek

Basin No. N-156

Location: From T 1N to T 13N and R 48E to R 52E

*Estimated Annual Surface Water Runoff 8,000 AFY

*Estimated Annual Natural Groundwater Recharge 7,200 AFY

*Estimated Annual Natural Groundwater Discharge 4,600 AFY

*Estimated Perennial Groundwater Yield 5,500 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>25</u>	<u>41.4780</u>	<u>18,865</u>
Certificates & Proofs	<u>46</u>	<u>4.1577</u>	<u>1,050</u>
Total Surface Water	<u>71</u>	<u>45.6357</u>	<u>19,915</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>47</u>	<u>185.2950</u>	<u>25,293</u>
Certificates & Proofs	<u>10</u>	<u>7.2250</u>	<u>3,813</u>
Total Groundwater	<u>57</u>	<u>192.5200</u>	<u>29,106</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>72</u>	<u>226.7730</u>	<u>44,158</u>
Certificates & Proofs	<u>56</u>	<u>11.3827</u>	<u>4,863</u>
Total G&S	<u>128</u>	<u>238.1557</u>	<u>49,021</u>

State Nevada

Basin Name Hot Creek Basin No. N-156

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	71	45.6357	19,915
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	71	45.6357	19,915

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	56	192.4200	29,104
State Government	1	.1000	2
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	57	192.5200	29,106

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	127	238.0557	49,019
State Government	1	.1000	2
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	128	238.1557	49,021

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Hot Creek Basin No. N-156

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	14	3.6677	2,542
Stock	35	1.9440	1,323
Irrigation	19	40.0240	16,050
Mining	3	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	71	45.6357	19,915

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	.1000	2
Stock	7	.1250	111
Irrigation	46	185.2950	25,163
Mining	3	7.000	3,830
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	57	192.5200	29,106

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	15	3.7677	2,544
Stock	42	2.0690	1,434
Irrigation	65	225.3190	41,213
Mining	6	7.000	3,830
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	128	238.1557	49,021

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Hot Creek Valley

Basin No. N-156

NOTES:

1. For 13 groundwater Applications (Permits?) the rate, duty and use were not given in the abstract. Notation indicated all were associated with DLE thus they were assigned to irrigation of a total of 160 acres per application with diversion rate of 2.7 cfs and duty of 4 ac-ft/ac. Aggregate rate and annual use for these is thus 35.1 cfs and 8320 ac-ft/yr respectively.

State Nevada

Basin Name Tikapoo Valley

Basin No. N-169

Location: From T 3S to T 14S and R 55E to R 61E

*Estimated Annual Surface Water Runoff N/A AFY
*Estimated Annual Natural Groundwater Recharge 6,000 AFY
*Estimated Annual Natural Groundwater Discharge 6,000 AFY
*Estimated Perennial Groundwater Yield 4,300 AFY
*Estimated Transitional Storage Reserve N/A AF
*Source R54, WPR3

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>2</u>	<u>1.0047</u>	<u>4</u>
Certificates & Proofs	<u>25</u>	<u>0.0627</u>	<u>44</u>
Total Surface Water	<u>27</u>	<u>1.0674</u>	<u>48</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>-</u>	<u>-</u>	<u>-</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>2</u>	<u>1.0047</u>	<u>4</u>
Certificates & Proofs	<u>25</u>	<u>1.0627</u>	<u>44</u>
Total G&S	<u>27</u>	<u>1.0674</u>	<u>48</u>

State Nevada

Basin Name Tikapoo Valley Basin No. N-169

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	24	1.0607	44
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>3</u>	<u>.0067</u>	<u>4</u>
Total	27	1.0674	48

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	-	-	-
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>-</u>	<u>-</u>	<u>-</u>
Total	-	-	-

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	24	1.0607	44
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>3</u>	<u>.0067</u>	<u>4</u>
Totals	27	1.0674	48

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Tikapoo Valley Basin No. N-169

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	27	1.0674	48
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	27	1.0674	48

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	-	-	-
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	-	-	-

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	27	1.0674	48
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	27	1.0674	48

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Penoyer Valley

Basin No. N-170

Location: From T 5S to T 2N and R 52E to R 58E

*Estimated Annual Surface Water Runoff 1,000 AFY

*Estimated Annual Natural Groundwater Recharge 4,300 AFY

*Estimated Annual Natural Groundwater Discharge 3,800 AFY

*Estimated Perennial Groundwater Yield 4,000 AFY

*Estimated Transitional Storage Reserve 770,000 AF

*Source WPR3, R50, B12

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>11</u>	<u>3.036</u>	<u>2,212</u>
Certificates & Proofs	<u>17</u>	<u>.258</u>	<u>162</u>
Total Surface Water	<u>28</u>	<u>3.344</u>	<u>2,374</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>29</u>	<u>107.93</u>	<u>36,153</u>
Certificates & Proofs	<u>35</u>	<u>58.17</u>	<u>15,164</u>
Total Groundwater	<u>64</u>	<u>166.10</u>	<u>51,317</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>40</u>	<u>111.016</u>	<u>38,365</u>
Certificates & Proofs	<u>52</u>	<u>58.428</u>	<u>15,326</u>
Total G&S	<u>92</u>	<u>169.444</u>	<u>53,691</u>

State Nevada

Basin Name Penoyer Valley Basin No. N-170

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	26	3.3352	2,368
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>2</u>	<u>.0088</u>	<u>6</u>
Total	28	3.344	2,374

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	63	166.092	51,311
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>.008</u>	<u>6</u>
Total	64	166.10	51,317

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	89	169.4272	53,679
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>3</u>	<u>.0168</u>	<u>12</u>
Totals	92	169.444	53,691

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Penover Valley Basin No. N-179

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	27	3.264	2,340
Irrigation	1	.08	34
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	28	3.334	2,374

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	10	13.263	8,392
Domestic	--	--	--
Stock	16	.133	96
Irrigation	36	149.10	40,223
Mining	2	3.60	2,606
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	64	166.096	51,317

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	10	13.263	8,392
Domestic	--	--	--
Stock	43	3.397	2,436
Irrigation	37	149.18	40,257
Mining	2	3.60	2,606
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	92	169.440	53,691

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Coal Valley

Basin No. N-171

Location: From T 3S to T 4N and R 57E to R 61E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 10,000 AFY

*Estimated Annual Natural Groundwater Discharge 10,000 AFY

*Estimated Perennial Groundwater Yield 6,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R18, WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>.0069</u>	<u>5</u>
Certificates & Proofs	<u>13</u>	<u>.2237</u>	<u>184</u>
Total Surface Water	<u>14</u>	<u>.2306</u>	<u>189</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>9.0</u>	<u>6,515</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>6</u>	<u>9.0</u>	<u>6,515</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>20</u>	<u>9.2306</u>	<u>6,704</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total G&S	<u>20</u>	<u>9.2306</u>	<u>6,704</u>

State Nevada

Basin Name Coal Valley Basin No. N-171

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	14	.2306	189
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	14	.2306	189

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	6	9.0	6,515
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	6	9.0	6,515

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	20	9.2306	6,704
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	20	9.2306	6,704

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Coal Valley Basin No. N-171

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	14	.2306	189
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	14	.2306	189

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	<u>6</u>	<u>9.0</u>	<u>6,515</u>
Totals	6	9.0	6,515

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	14	.2306	189
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	<u>6</u>	<u>9.0</u>	<u>6,515</u>
Totals	20	9.2306	6,704

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Coal Valley

Basin No. N-171

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

State Nevada

Basin Name Garden Valley

Basin No. N-172

Location: From T 2S to T 5N and R 55E to R 59E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 10,000 AFY

*Estimated Annual Natural Groundwater Discharge 10,000 AFY

*Estimated Perennial Groundwater Yield 6,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R54

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>2</u>	<u>.0406</u>	<u>29</u>
Certificates & Proofs	<u>31</u>	<u>5.1925</u>	<u>2,145</u>
Total Surface Water	<u>33</u>	<u>5.2331</u>	<u>2,174</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>9</u>	<u>24.30</u>	<u>5,760</u>
Certificates & Proofs	<u>5</u>	<u>2.0938</u>	<u>795</u>
Total Groundwater	<u>14</u>	<u>26.3938</u>	<u>6,555</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>11</u>	<u>24.3406</u>	<u>5,789</u>
Certificates & Proofs	<u>36</u>	<u>7.2863</u>	<u>2,940</u>
Total G&S	<u>47</u>	<u>31.6269</u>	<u>8,729</u>

State Nevada

Basin Name Garden Valley Basin No. N-172

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	33	5.2331	2,174
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	33	5.2331	2,174

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	14	26.3938	6,555
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	14	26.3938	6,555

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	47	31.6269	8,729
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	47	31.6269	8,729

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Garden Valley Basin No. N-172

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	.025	18
Stock	17	.3242	202
Irrigation	15	4.8839	1,954
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	33	5.2331	2,174

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	4	.0938	68
Irrigation	10	26.30	6,487
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	14	26.3938	6,555

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	.025	18
Stock	21	.4180	270
Irrigation	25	31.1839	8,441
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	47	31.6269	8,729

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Garden Valley

Basin No. N-172

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

State Nevada

Basin Name Railroad Valley

Basin No. N-173 A&B

Location: From T 3S to T 16N and R 50E to R 59E

*Estimated Annual Surface Water Runoff 26,000 AFY

*Estimated Annual Natural Groundwater Recharge 54,600 AFY

*Estimated Annual Natural Groundwater Discharge 81,000 AFY

*Estimated Perennial Groundwater Yield 75,000 AFY

*Estimated Transitional Storage Reserve 3,400,000 AF

*Source WPR3, R60, B12

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>17</u>	<u>24.373435</u>	<u>7,238</u>
Certificates & Proofs	<u>124</u>	<u>52.697245</u>	<u>17,090</u>
Total Surface Water	<u>141</u>	<u>77.07068</u>	<u>24,328</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>180</u>	<u>1039.2494</u>	<u>191,208</u>
Certificates & Proofs	<u>39</u>	<u>18.39176</u>	<u>4,910</u>
Total Groundwater	<u>219</u>	<u>1057.64116</u>	<u>196,118</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>197</u>	<u>1063.622835</u>	<u>198,446</u>
Certificates & Proofs	<u>163</u>	<u>71.089005</u>	<u>22,000</u>
Total G&S	<u>360</u>	<u>1134.71184</u>	<u>220,446</u>

State Nevada

Basin Name Railroad Valley Basin No. N-173 A&B

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	134	75.67068	23,316
State Government	2	1.151	832
Local Governmental Entities	--	--	--
Special Districts	1	0.05	36
Native American	2	0.18	130
Federal Government	<u>2</u>	<u>0.019</u>	<u>14</u>
Total	141	77.07068	24,328

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	209	1053.84716	193,375
State Government	9	3.794	2,743
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>--</u>	<u>--</u>	<u>--</u>
Total	219	1057.64116	196,118

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	343	1129.51784	216,691
State Government	11	4.945	3,575
Local Governmental Entities	--	--	--
Special Districts	1	0.05	36
Native American	2	0.018	130
Federal Government	<u>2</u>	<u>0.019</u>	<u>14</u>
Totals	360	1134.54984	220,446

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Railroad Valley Basin No. N-173 A&B

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	5	0.1286	93
Stock	78	5.18555	3,749
Irrigation	43	68.289	17,978
Mining	14	2.34753	1,698
Recreation	1	1.12	810
Wildlife	--	--	--
Other	--	--	--
Totals	141	77.07068	24,328

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	0.1	72
Stock	28	1.41996	1,040
Irrigation	177	1046.6227	188,139
Mining	2	1.0045	726
Recreation	7	2.694	1,948
Wildlife	--	--	--
Other	3	5.8	4,193
Totals	219	1057.64116	196,118

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	6	0.2286	165
Stock	106	6.60551	4,789
Irrigation	220	1114.9117	206,117
Mining	16	3.35203	2,424
Recreation	8	3.814	2,758
Wildlife	--	--	--
Other	3	5.8	4,193
Totals	360	1134.71184	220,446

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Railroad Valley

Basin No. N-173

NOTES:

1. This is one of the first basins summarized. Irrigation duty was assumed to be 3 ac-ft/ac based on length of growing season. If the 4 ac-ft/ac duty rule of thumb for north townships is used the irrigation annual use totals would increase by approximately the following amounts:

Surface Water Applications & Permits	1,780 af/y
Surface Water Certificates & Proofs	3,096 af/y
Groundwater Applications & Permits	60,819 af/y
Groundwater Certificates & Proofs	<u>1,099 af/v</u>
Total	66,794 af/y

State Nevada

Basin Name Steptoe Valley

Basin No. N-179

Location: From T 10N to T 29N and R 61E to R 67E

*Estimated Annual Surface Water Runoff 78,000 AFY

*Estimated Annual Natural Groundwater Recharge 85,000 AFY

*Estimated Annual Natural Groundwater Discharge 70,000 AFY

*Estimated Perennial Groundwater Yield 70,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R42

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>13</u>	<u>25.8212</u>	<u>7,627</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>13</u>	<u>25.8212</u>	<u>7,627</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>59</u>	<u>189.5094</u>	<u>45,923</u>
Certificates & Proofs	<u>100</u>	<u>171.7249</u>	<u>37,073</u>
Total Groundwater	<u>159</u>	<u>361.2343</u>	<u>82,996</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>72</u>	<u>215.3306</u>	<u>53,550</u>
Certificates & Proofs	<u>100</u>	<u>171.7249</u>	<u>37,073</u>
Total G&S	<u>172</u>	<u>387.0555</u>	<u>90,623</u>

State Nevada

Basin Name Steptoe Valley Basin No. N-179

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	11	20.80	3,997
State Government	2	5.0212	3,630
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	13	25.8212	7,627

Groundwater

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	147	349.8929	77,001
State Government	1	.1114	8
Local Governmental Entities	11	11.23	5,987
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	159	361.2343	82,996

Total Surface and Groundwater

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	158	370.6929	80,998
State Government	3	5.1326	3,638
Local Governmental Entities	11	11.23	5,987
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	172	387.0555	90,623

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Steptoe Valley

Basin No. N-179

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	3	.30	217
Irrigation	8	20.50	3,780
Mining	--	--	--
Recreation	1	.0212	15
Wildlife	1	5.0	3,615
Other	--	--	--
Totals	13	25.8212	7,627

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	21	10.5956	6,832
Domestic	2	.253	15
Stock	4	.0954	48
Irrigation	125	341.7693	70,956
Mining	1	3.676	2,657
Recreation	1	1.42	1,027
Wildlife	--	--	--
Other	5	3.425	1,461
Totals	159	361.2343	82,996

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	21	10.5956	6,832
Domestic	2	.253	15
Stock	7	.3954	265
Irrigation	133	362.2693	74,736
Mining	1	3.676	2,657
Recreation	2	1.4412	1,042
Wildlife	1	5.0	3,615
Other	5	3.425	1,461
Totals	172	387.0555	90,623

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Cave Valley

Basin No. N-180

Location: From T 5N to T 11N and R 62E to R 64E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 14,000 AFY

*Estimated Annual Natural Groundwater Discharge 14,000 AFY

*Estimated Perennial Groundwater Yield 2,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R13, WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>40</u>	<u>13.0288</u>	<u>5,837</u>
Total Surface Water	<u>40</u>	<u>13.0288</u>	<u>5,837</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>3</u>	<u>0035</u>	<u>32</u>
Total Groundwater	<u>3</u>	<u>0035</u>	<u>32</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>43</u>	<u>13.0953</u>	<u>5,869</u>
Total G&S	<u>43</u>	<u>13.0953</u>	<u>5,869</u>

State Nevada

Basin Name Cave Valley Basin No. N-180

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	40	13.0288	5,837
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	40	13.0288	5,837

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	3	0.0305	32
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	3	0.0305	32

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	43	13.0953	5,869
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	43	13.0953	5,869

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Cave Valley Basin No. N-180

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	0.044	32
Stock	31	7.2029	3,691
Irrigation	8	5.7819	2,114
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	<u>40</u>	<u>13.0288</u>	<u>5,837</u>

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	3	0.0305	32
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	<u>3</u>	<u>0.0305</u>	<u>32</u>

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	0.044	32
Stock	34	7.2334	3,723
Irrigation	8	5.7819	2,114
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	<u>43</u>	<u>13.0953</u>	<u>5,869</u>

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Cave Valley

Basin No. N-180

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

State Nevada

Basin Name Dry Lake Valley

Basin No. N-181

Location: From T 5S to T 7N and R 63E to R 66E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 5,000 AFY

*Estimated Annual Natural Groundwater Discharge 5,000 AFY

*Estimated Perennial Groundwater Yield 2,500 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source RI6, WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>29</u>	<u>5.8320</u>	<u>2,596</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Surface Water	<u>29</u>	<u>5.8320</u>	<u>2,596</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>0.500</u>	<u>361</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>2</u>	<u>0.500</u>	<u>361</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>31</u>	<u>6.3320</u>	<u>2,957</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total G&S	<u>31</u>	<u>6.3320</u>	<u>2,957</u>

State Nevada

Basin Name Dry Lake Valley Basin No. N-181

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	29	5.8320	2,596
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	29	5.8320	2,596

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	0.5000	361
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	2	0.5000	361

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	31	6.3320	2,957
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	31	6.3320	2,957

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Dry Lake Valley Basin No. N-181

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	29	5.832	2,596
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	29	5.832	2,596

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	2	0.500	361
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	2	0.500	361

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	31	6.3320	2,957
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	31	6.3320	2,957

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Dry Lake Valley

Basin No. N-181

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

State Nevada

Basin Name Delamar Valley

Basin No. N-182

Location: From T 3S to T 8S and R 62E to R 65E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 6,000 AFY

*Estimated Annual Natural Groundwater Discharge 6,000 AFY

*Estimated Perennial Groundwater Yield 3,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R16 and WPR3

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>16</u>	<u>0.41321</u>	<u>250</u>
Total Surface Water	<u>16</u>	<u>0.41321</u>	<u>250</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>1</u>	<u>0.01</u>	<u>7</u>
Total Groundwater	<u>1</u>	<u>0.01</u>	<u>7</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>17</u>	<u>0.42321</u>	<u>257</u>
Total G&S	<u>17</u>	<u>0.42321</u>	<u>257</u>

State Nevada

Basin Name Delamar Valley Basin No. N-182

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	16	0.41321	250
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	16	0.41321	250

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.01	7
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	1	0.01	7

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	17	0.42321	257
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	17	0.42321	257

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Delamar Valley Basin No. N-182

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	2	0.0266	19
Stock	13	0.26661	188
Irrigation	1	0.12	43
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	16	0.41321	250

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	0.01	7
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	1	0.01	7

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	2	0.0266	19
Stock	14	0.27661	195
Irrigation	1	0.12	43
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	17	0.42321	257

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Delamar Valley

Basin No. N-182

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

2. For one surface water Permit there were no data what-so-ever in the Abstract to allow any classification thus it is not included.

State Nevada

Basin Name Lake Valley

Basin No. N-183

Location: From T 5N to T 11N and R 64E to R 68E

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 13,000 AFY

*Estimated Annual Natural Groundwater Discharge 12,000 AFY

*Estimated Perennial Groundwater Yield 12,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R24

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>8</u>	<u>7.0095</u>	<u>1,347</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Surface Water	<u>8</u>	<u>7.0095</u>	<u>1,347</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>79</u>	<u>232.3389</u>	<u>57,463</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>79</u>	<u>323.3389</u>	<u>57,463</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>87</u>	<u>239.3484</u>	<u>58,810</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total G&S	<u>87</u>	<u>239.3484</u>	<u>58,810</u>

State Nevada

Basin Name Lake Valley Basin No. N-183

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	8	7.0095	1,347
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	8	7.0095	1,347

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	63	175.3589	42,707
State Government	2	1.1700	846
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	14	55.8100	13,910
Total	79	232.3389	57,463

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	71	182.3684	44,054
State Government	2	1.1700	846
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	14	55.8100	13,910
Totals	87	239.3484	58,810

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Lake Valley Basin No. N-183

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	5	.0095	7
Irrigation	3	7.000	1,340
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	8	7.0095	1,347

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	1.237	894
Domestic	-	-	-
Stock	32	.6989	505
Irrigation	43	228.9030	54,930
Mining	1	1.500	1,084
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	79	232.3389	57,463

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	1.237	894
Domestic	-	-	-
Stock	37	0.7084	512
Irrigation	46	235.9030	56,320
Mining	1	1.5	1,084
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	87	239.3484	58,810

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Spring Valley

Basin No. N-184

Location: From T 6N to T 25N and R 65E to R 69E

*Estimated Annual Surface Water Runoff 90,000 AFY

*Estimated Annual Natural Groundwater Recharge 77,000 AFY

*Estimated Annual Natural Groundwater Discharge 74,000 AFY

*Estimated Perennial Groundwater Yield 100,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>48</u>	<u>120.0930</u>	<u>63,181</u>
Certificates & Proofs	<u>93</u>	<u>110.5502</u>	<u>27,194</u>
Total Surface Water	<u>141</u>	<u>230.6432</u>	<u>90,375</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>26</u>	<u>109.4040</u>	<u>43,912</u>
Certificates & Proofs	<u>47</u>	<u>41.7614</u>	<u>11,451</u>
Total Groundwater	<u>73</u>	<u>152.3156</u>	<u>55,363</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>74</u>	<u>229.4970</u>	<u>107,093</u>
Certificates & Proofs	<u>140</u>	<u>152.3066</u>	<u>38,645</u>
Total G&S	<u>214</u>	<u>381.8126</u>	<u>145,738</u>

State Nevada

Basin Name Spring Valley Basin No. N-184

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	141	230.6432	90,375
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	141	230.6432	90,375

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	72	151.1416	55,343
State Government	1	.0278	20
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	73	151.1694	55,363

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	213	381.7848	145,718
State Government	1	.0278	20
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	214	381.8126	145,738

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Spring Valley Basin No. N-184

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	2	5.2060	1,004
Stock	52	1.9059	1,168
Irrigation	71	206.1133	78,123
Mining	15	14.9380	8,280
Recreation	--	--	--
Wildlife	--	--	--
Other	<u>1</u>	<u>2.4800</u>	<u>1,800</u>
Totals	141	230.6432	90,375

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	.1000	2
Domestic	--	--	--
Stock	24	.4700	245
Irrigation	32	94.8516	29,496
Mining	8	25.6600	5,557
Recreation	1	.0278	20
Wildlife	--	--	--
Other	<u>7</u>	<u>30.0600</u>	<u>20,043</u>
Totals	73	151.1694	55,363

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	.1000	2
Domestic	2	5.2060	1,004
Stock	76	2.3759	1,413
Irrigation	103	300.9649	107,619
Mining	23	40.5980	13,837
Recreation	1	.0278	20
Wildlife	--	--	--
Other	<u>8</u>	<u>32.5400</u>	<u>21,843</u>
Totals	214	381.8126	145,738

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Pleasant Valley

Basin No. N-194

Location: From T 20N to T 22N and R 69E to R 70E

*Estimated Annual Surface Water Runoff 38,000 including N-195 & N-196 AFY

*Estimated Annual Natural Groundwater Recharge 4,800 AFY

*Estimated Annual Natural Groundwater Discharge 3,000 AFY

*Estimated Perennial Groundwater Yield 1,500 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.58</u>	<u>240</u>
Certificates & Proofs	<u>22</u>	<u>3.6634</u>	<u>1,353</u>
Total Surface Water	<u>23</u>	<u>4.2434</u>	<u>1,593</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>17.3</u>	<u>4,320</u>
Certificates & Proofs	<u>1</u>	<u>1.0</u>	<u>273</u>
Total Groundwater	<u>7</u>	<u>18.3</u>	<u>4,593</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>17.88</u>	<u>4,560</u>
Certificates & Proofs	<u>23</u>	<u>4.6634</u>	<u>1,626</u>
Total G&S	<u>30</u>	<u>22.5434</u>	<u>6,186</u>

State Nevada

Basin Name Pleasant Valley Basin No. N-104

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	23	4.2434	1,593
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	23	4.2434	1,593

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	7	18.3	4,593
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	7	18.3	4,593

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	30	22.5434	6,186
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	30	22.5434	6,186

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Pleasant Valley Basin No. N-194

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	16	0.3424	175
Irrigation	7	3.9010	1,418
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	23	4.2434	1,593

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	7	18.3	4,593
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	7	18.3	4,593

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	175
Irrigation	30	22.5434	6,011
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	30	22.5434	6,186

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Snake Valley

Basin No. N-195

Location: From T 10N to T 21N and R 68E to R 70E

*Estimated Annual Surface Water Runoff 38,000 including N-194 & N-196 AFY

*Estimated Annual Natural Groundwater Recharge 65,000/Nev, 40,000/Ut AFY

*Estimated Annual Natural Groundwater Discharge 105,000 AFY

*Estimated Perennial Groundwater Yield 80,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R34

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>9</u>	<u>70.937</u>	<u>33,377</u>
Certificates & Proofs	<u>66</u>	<u>47.5548</u>	<u>18,213</u>
Total Surface Water	<u>75</u>	<u>118.4918</u>	<u>51,590</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>20</u>	<u>62.00</u>	<u>15,056</u>
Certificates & Proofs	<u>10</u>	<u>8.9348</u>	<u>2,939</u>
Total Groundwater	<u>30</u>	<u>70.9348</u>	<u>17,995</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>29</u>	<u>132.9370</u>	<u>48,433</u>
Certificates & Proofs	<u>76</u>	<u>56.4896</u>	<u>21,152</u>
Total G&S	<u>105</u>	<u>189.4266</u>	<u>69,585</u>

State Nevada

Basin Name Snake Valley Basin No. N-195

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	70	110.2968	45,658
State Government	4	8.045	5,824
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>0.15</u>	<u>108</u>
Totals	75	118.4918	51,590

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	28	66.9125	15,083
State Government	2	4.0223	2,912
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>--</u>	<u>--</u>	<u>--</u>
Total	30	70.9348	17,995

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	98	177.2093	60,741
State Government	6	12.0673	8,735
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>0.15</u>	<u>108</u>
Totals	105	189.4266	69,585

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Snake Valley Basin No. N-195

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	0.15	108
Stock	33	0.4212	281
Irrigation	36	101.8956	39,601
Mining	1	1.0	724
Recreation	--	--	--
Wildlife	--	--	--
Other	4	15.025	10,876
Totals	75	118.4918	51,590

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.22	4
Domestic	1	0.0223	16
Stock	2	0.0375	27
Irrigation	25	66.655	15,052
Mining	--	--	--
Recreation	--	--	--
Wildlife	1	4.000	2,896
Other	--	--	--
Totals	30	70.9348	17,995

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.22	4
Domestic	2	0.1723	124
Stock	35	0.4587	308
Irrigation	61	168.5506	54,653
Mining	1	1.000	724
Recreation	--	--	--
Wildlife	1	4.000	2,896
Other	4	15.025	10,876
Totals	105	189.4266	79,585

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Hamlin Valley

Basin No. N-196

Location: From T 1N to T 12N and R 68E to R 71E

*Estimated Annual Surface Water Runoff 38,000 including N-194 & N-195 AFY

*Estimated Annual Natural Groundwater Recharge 14,000 AFY

*Estimated Annual Natural Groundwater Discharge 14,000 AFY

*Estimated Perennial Groundwater Yield 5,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source R34 and WRP3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>6.0</u>	<u>4,346</u>
Certificates & Proofs	<u>40</u>	<u>1.7932</u>	<u>847</u>
Total Surface Water	<u>42</u>	<u>7.7932</u>	<u>5,193</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.25</u>	<u>181</u>
Certificates & Proofs	<u>1</u>	<u>0.25</u>	<u>181</u>
Total Groundwater	<u>2</u>	<u>0.50</u>	<u>362</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>6.25</u>	<u>4,527</u>
Certificates & Proofs	<u>41</u>	<u>2.0432</u>	<u>1,028</u>
Total G&S	<u>44</u>	<u>8.2932</u>	<u>5,555</u>

State Nevada

Basin Name Hamlin Valley Basin No. N-196

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	42	7.7932	5,193
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	42	7.7932	5,193

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	0.50	362
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	2	0.50	362

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	44	8.2932	5,555
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	44	8.2932	5,555

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Harlin Valley Basin No. N-196

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	34	0.9750	452
Irrigation	6	0.8182	395
Mining	2	6.0	4,346
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	42	7.7932	5,193

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	0.50	362
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	2	0.50	362

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	36	1.475	814
Irrigation	6	0.8182	395
Mining	2	6.0	4,346
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	44	8.2932	5,555

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Hamlin Valley

Basin No. N-196

NOTES:

1. Two surface water permits were not included because of lack of data in the Abstract by which to determine type of use, rate, duty or annual use.

State Nevada

Basin Name Dry Valley

Basin No. N-198

Location: From T 2S to T 1N and R 68E to R 71E

*Estimated Annual Surface Water Runoff 400 AFY

*Estimated Annual Natural Groundwater Recharge 1,300 AFY

*Estimated Annual Natural Groundwater Discharge 10 AFY

*Estimated Perennial Groundwater Yield 1,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>--</u>	<u>--</u>	<u>--</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>20.30</u>	<u>4,102</u>
Certificates & Proofs	<u>11</u>	<u>24.67</u>	<u>4,825</u>
Total Groundwater	<u>18</u>	<u>44.97</u>	<u>8,927</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>20.30</u>	<u>4,102</u>
Certificates & Proofs	<u>11</u>	<u>24.67</u>	<u>4,825</u>
Total G&S	<u>18</u>	<u>44.97</u>	<u>8,927</u>

State Nevada

Basin Name Dry Valley Basin No. N-198

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	--	--	--

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	1
Domestic	--	--	--
Stock	--	--	--
Irrigation	17	43.97	8,926
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	18	44.97	8,927

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	1
Domestic	--	--	--
Stock	--	--	--
Irrigation	17	43.97	8,926
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	18	44.97	8,927

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Dry Valley Basin No. N-198

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	--	--	--
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	--	--	--

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	17	43.97	8,926
State Government	1	1.0	1
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	18	44.97	8,927

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	17	43.97	8,926
State Government	1	1.0	1
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	18	44.97	8,927

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Dry Valley

Basin No. N-198

NOTES:

1. Three groundwater permits were not included because of a lack of data in the Abstract by which to determine type of use, rate, duty or annual use.

State Nevada

Basin Name Rose Valley

Basin No. N-199

Location: From T 1N to T _____ and R 69E to R 70E

*Estimated Annual Surface Water Runoff <100 AFY

*Estimated Annual Natural Groundwater Recharge <100 AFY

*Estimated Annual Natural Groundwater Discharge 10 AFY

*Estimated Perennial Groundwater Yield 100 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>--</u>	<u>--</u>	<u>--</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>5</u>	<u>7.47</u>	<u>2440</u>
Total Groundwater	<u>5</u>	<u>7.47</u>	<u>2440</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>5</u>	<u>7.47</u>	<u>2440</u>
Total G&S	<u>5</u>	<u>7.47</u>	<u>2440</u>

State Nevada

Basin Name Rose Valley Basin No. N-199

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	--	--	--
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
	--	--	--

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	7.47	2440
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	5	7.47	2440

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	7.47	2440
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	5	7.47	2440

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Rose Valley

Basin No. N-199

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	--	--	--

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	5	7.47	2440
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	7.47	2440

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	5	7.47	2440
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	7.47	2440

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Eagle Valley

Basin No. N-200

Location: From T 1N to T 2N and R 69E to R 71E

*Estimated Annual Surface Water Runoff 4,400 AFY
*Estimated Annual Natural Groundwater Recharge 1,100 AFY
*Estimated Annual Natural Groundwater Discharge 290 AFY
*Estimated Perennial Groundwater Yield 30,000 AFY
*Estimated Transitional Storage Reserve N/A AF
*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>--</u>	<u>--</u>	<u>--</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>--</u>	<u>--</u>	<u>--</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>5.9</u>	<u>1642</u>
Certificates & Proofs	<u>2</u>	<u>3.0</u>	<u>248</u>
Total Groundwater	<u>5</u>	<u>8.9</u>	<u>1890</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>5.9</u>	<u>1642</u>
Certificates & Proofs	<u>2</u>	<u>3.0</u>	<u>248</u>
Total G&S	<u>5</u>	<u>8.9</u>	<u>1890</u>

State Nevada

Basin Name Eagle Valley

Basin No. N-200

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	--	--	--
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
	--	--	--

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	8.9	1890
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	5	8.9	1890

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	8.9	1890
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	5	8.9	1890

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Eagle Valley

Basin No. N-200

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	--	--	--

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	0.5	362
Domestic	--	--	--
Stock	--	--	--
Irrigation	3	8.4	1528
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	8.9	1890

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	0.5	362
Domestic	--	--	--
Stock	--	--	--
Irrigation	3	8.4	1528
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	8.9	1890

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Spring Valley

Basin No. N-201

Location: From T 2N to T 6N and R 68E to R 71E

*Estimated Annual Surface Water Runoff 5,700 AFY
 *Estimated Annual Natural Groundwater Recharge 10,000 AFY
 *Estimated Annual Natural Groundwater Discharge 1,000 AFY
 *Estimated Perennial Groundwater Yield 1,000 AFY
 *Estimated Transitional Storage Reserve N/A AF
 *Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	--	--	--
Certificates & Proofs	<u>1</u>	<u>storage</u>	<u>825</u>
Total Surface Water	<u>1</u>	<u>storage</u>	<u>825</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>6</u>	<u>26.76</u>	<u>4,818</u>
Certificates & Proofs	<u>1</u>	<u>0.70</u>	<u>198</u>
Total Groundwater	<u>7</u>	<u>27.46</u>	<u>5,016</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>6</u>	<u>26.76</u>	<u>4,818</u>
Certificates & Proofs	<u>2</u>	<u>0.70</u>	<u>1,023</u>
Total G&S	<u>8</u>	<u>27.46</u>	<u>5,841</u>

State Nevada

Basin Name Spring Valley Basin No. N-201

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	--	--	--
State Government	1	storage	825
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	1	storage	825

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	25.46	5,004
State Government	2	2.0	12
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	7	27.46	5,016

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	25.46	5,004
State Government	3	2.00	837
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	8	27.46	5,841

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Spring Valley Basin No. N-201

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	--	--	--
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	1	storage	825
Other	--	--	--
Totals	1	storage	825

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	11
Domestic	1	1.0	1
Stock	--	--	--
Irrigation	5	25.46	5,004
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	7	27.46	5,016

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	11
Domestic	1	1.0	1
Stock	--	--	--
Irrigation	5	25.46	5,004
Mining	--	--	--
Recreation	--	--	--
Wildlife	1	storage	825
Other	--	--	--
Totals	8	27.46	5,841

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Spring Valley

Basin No. N-201

NOTES:

1. Two additional surface water permits are being held pending Adjudication of Camp Creek. Adjudication field investigation report filed 24 August 1976 but adjudication not complete as of February 1980.

State Nevada

Basin Name Patterson Valley

Basin No. N-202

Location: From T 1S to T 5N and R 65E to R 69E

*Estimated Annual Surface Water Runoff 3,300 AFY

*Estimated Annual Natural Groundwater Recharge 9,000 AFY

*Estimated Annual Natural Groundwater Discharge 9,100 AFY

*Estimated Perennial Groundwater Yield 4,500 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>4</u>	<u>2.0468</u>	<u>1,481</u>
Certificates & Proofs	<u>23</u>	<u>4.0036</u>	<u>914</u>
Total Surface Water	<u>27</u>	<u>6.0504</u>	<u>2,395</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>18</u>	<u>30.050</u>	<u>7,012</u>
Certificates & Proofs	<u>4</u>	<u>3.320</u>	<u>965</u>
Total Groundwater	<u>22</u>	<u>33.370</u>	<u>7,977</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>22</u>	<u>32.0968</u>	<u>8,493</u>
Certificates & Proofs	<u>27</u>	<u>7.3236</u>	<u>1,879</u>
Total G&S	<u>49</u>	<u>39.4204</u>	<u>10,372</u>

State Nevada

Basin Name Patterson Valley Basin No. N-202

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	26	4.0504	948
State Government	-	-	-
Local Governmental Entities	1	2.0	1,447
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	27	6.0504	2,395

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	19	32.05	7,018
State Government	-	-	-
Local Governmental Entities	3	1.32	959
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	22	33.37	7,977

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	45	36.1004	7,966
State Government	-	-	-
Local Governmental Entities	4	3.32	2,406
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	49	39.4204	10,372

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Patterson Valley Basin No. N-202

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	2.0	1,447
Domestic	-	-	-
Stock	21	0.178	121
Irrigation	4	3.8574	816
Mining	1	0.015	11
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	27	6.0504	2,395

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	1.32	959
Domestic	-	-	-
Stock	9	2.25	212
Irrigation	9	27.80	6,800
Mining	1	2.0	6
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	22	33.370	7,977

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	4	3.32	2,406
Domestic	-	-	-
Stock	30	2.4280	333
Irrigation	13	31.6574	7,616
Mining	2	2.015	17
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	49	39.4204	10,372

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Patterson Valley

Basin No. N-202

NOTES:

1. Three surface water permits were not included because of a lack of data in the Abstract by which to determine type of use, rate, duty or annual use.

State Nevada

Basin Name Panaca Valley

Basin No. N-203

Location: From T 4S to T 1N and R 65E to R 70E

*Estimated Annual Surface Water Runoff 400 AFY

*Estimated Annual Natural Groundwater Recharge 10,000 AFY

*Estimated Annual Natural Groundwater Discharge 530 AFY

*Estimated Perennial Groundwater Yield 9,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>9</u>	<u>30.23</u>	<u>1,472</u>
Certificates & Proofs	<u>12</u>	<u>7.58</u>	<u>2,685</u>
Total Surface Water	<u>21</u>	<u>37.81</u>	<u>4,157</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>34</u>	<u>95.81</u>	<u>25,138</u>
Certificates & Proofs	<u>47</u>	<u>66.04</u>	<u>13,795</u>
Total Groundwater	<u>81</u>	<u>161.85</u>	<u>38,933</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>43</u>	<u>126.04</u>	<u>26,610</u>
Certificates & Proofs	<u>59</u>	<u>73.62</u>	<u>16,480</u>
Total G&S	<u>102</u>	<u>199.66</u>	<u>43,090</u>

State Nevada

Basin Name Panaca Valley Basin No. N-203

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	21	37.81	4,157
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	21	37.81	4,157

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	80	160.85	38,209
State Government	--	--	--
Local Governmental Entities	1	1.0	724
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	81	161.85	38,933

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	101	198.66	42,366
State Government	--	--	--
Local Governmental Entities	1	1.0	724
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	102	199.66	43,090

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Panaca Valley Basin No. N-203

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	10	0.55	56
Irrigation	10	37.01	3,920
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	1	0.25	181
Totals	21	37.81	4,157

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	5.0	2,158
Domestic	--	--	--
Stock	--	--	--
Irrigation	71	154.38	35,086
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	7	2.47	1,689
Totals	81	161.85	38,933

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	5.0	2,158
Domestic	--	--	--
Stock	10	0.55	56
Irrigation	81	191.39	39,005
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	8	2.72	1,870
Totals	102	199.66	43,090

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Clover Valley

Basin No. N-204

Location: From T 3S to T 7S and R 67E to R 71E

*Estimated Annual Surface Water Runoff 40 AFY

*Estimated Annual Natural Groundwater Recharge 1,700 AFY

*Estimated Annual Natural Groundwater Discharge 210 AFY

*Estimated Perennial Groundwater Yield 1,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>.0264</u>	<u>19</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>2</u>	<u>.0264</u>	<u>19</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>10</u>	<u>17.5300</u>	<u>5,154</u>
Certificates & Proofs	<u>2</u>	<u>.3531</u>	<u>28</u>
Total Groundwater	<u>12</u>	<u>17.8831</u>	<u>5,182</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>12</u>	<u>17.5564</u>	<u>5,173</u>
Certificates & Proofs	<u>2</u>	<u>.3531</u>	<u>28</u>
Total G&S	<u>14</u>	<u>17.9095</u>	<u>5,201</u>

State Nevada

Basin Name Clover Valley Basin No. N-204

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	2	.0264	19
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	2	.0264	19

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	12	17.8831	5,182
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	12	17.8831	5,182

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	14	17.9095	5,201
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	14	17.9095	5,201

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Clover Valley Basin No. N-204

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	.0264	19
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	2	.0264	19

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	.0031	2
Irrigation	9	17.5600	4,949
Mining	1	.2200	159
Recreation	--	--	--
Wildlife	--	--	--
Other	1	.1000	72
Totals	12	17.8831	5,182

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	3	.0295	21
Irrigation	9	17.5600	4,949
Mining	1	.2200	159
Recreation	--	--	--
Wildlife	--	--	--
Other	1	.1000	72
Totals	14	17.9095	5,201

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Lower Meadow Valley Wash Basin No. N-205

Location: From T 4S to T 14S and R 64E to R 69E

*Estimated Annual Surface Water Runoff 300 AFY

*Estimated Annual Natural Groundwater Recharge 1,300 AFY

*Estimated Annual Natural Groundwater Discharge 8,400 AFY

*Estimated Perennial Groundwater Yield 5,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>.0204</u>	<u>15</u>
Certificates & Proofs	<u>6</u>	<u>.7125</u>	<u>515</u>
Total Surface Water	<u>9</u>	<u>.7329</u>	<u>530</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>155</u>	<u>719.01</u>	<u>168,845</u>
Certificates & Proofs	<u>34</u>	<u>43.812</u>	<u>12,374</u>
Total Groundwater	<u>189</u>	<u>762.822</u>	<u>181,219</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>158</u>	<u>719.0304</u>	<u>168,860</u>
Certificates & Proofs	<u>40</u>	<u>44.5245</u>	<u>12,889</u>
Total G&S	<u>198</u>	<u>763.5549</u>	<u>181,749</u>

State Nevada
 Lower Meadow
 Basin Name Valley Wash Basin No. N-205

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	9	.7329	530
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	9	.7329	530

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	182	749.722	172,064
State Government	--	--	--
Local Governmental Entities	7	13.10	9,155
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	189	762.822	181,219

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	191	750.4549	172,594
State Government	--	--	--
Local Governmental Entities	7	13.10	9,155
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Totals	198	763.5549	181,749

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada
 Lower Meadow
 Basin Name Valley Wash Basin No. N-205

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	8	.4829	349
Irrigation	--	--	--
Mining	1	.25	181
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	9	.7329	530

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	7	11.18	8,091
Domestic	2	2.10	1,194
Stock	1	.0089	6
Irrigation	169	735.0821	161,523
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	10	14.451	10,405
Totals	189	762.822	181,219

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	7	11.18	8,091
Domestic	2	2.10	1,194
Stock	9	.4918	355
Irrigation	169	735.0821	161,523
Mining	1	.25	181
Recreation	--	--	--
Wildlife	--	--	--
Other	10	14.451	10,405
Totals	198	763.5549	181,749

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Kane Springs Valley

Basin No. N-206

Location: From T 6S to T 11S and R 63E to R 66E

*Estimated Annual Surface Water Runoff 150 AFY

*Estimated Annual Natural Groundwater Recharge 500 AFY

*Estimated Annual Natural Groundwater Discharge Minor AFY

*Estimated Perennial Groundwater Yield Minor AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>10</u>	<u>0.3163</u>	<u>26</u>
Certificates & Proofs	<u>21</u>	<u>0.2078</u>	<u>83</u>
Total Surface Water	<u>31</u>	<u>0.5241</u>	<u>109</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>28</u>	<u>94.72</u>	<u>23,659</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Groundwater	<u>28</u>	<u>94.72</u>	<u>23,659</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>38</u>	<u>95.0363</u>	<u>23,685</u>
Certificates & Proofs	<u>21</u>	<u>0.2078</u>	<u>83</u>
Total G&S	<u>59</u>	<u>95.2441</u>	<u>23,768</u>

State Nevada

Basin Name Kane Springs Valley Basin No. N-206

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	25	0.5181	105
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>6</u>	<u>0.0060</u>	<u>4</u>
Total	31	0.5241	109

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	28	94.72	23,659
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>--</u>	<u>--</u>	<u>--</u>
Total	28	94.72	23,659

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	53	95.2381	23,764
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>6</u>	<u>0.006</u>	<u>4</u>
Totals	59	95.2441	23,768

¹These totals include all Applications, Permits, Certificates and Proofs

AD-A112 434

FUGRO NATIONAL INC LONG BEACH CA F/8 7/4
MX SITING INVESTIGATION. WATER RIGHTS INVENTORY, NEVADA-UTAH. W-ETC(U)
DEC 80 F04704-80-C-0006
FN-80-DEC-1 NL

UNCLASSIFIED

3 3
ADA
F04704

END
DATE
FILMED
4-82
DTIC

A
2 4 3

State Nevada

Basin Name Kane Springs Valley Basin No. N-206

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	25	0.5181	105
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	6	0.0060	4
Other	--	--	--
Totals	31	0.5241	109

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.22	159
Domestic	--	--	--
Stock	--	--	--
Irrigation	27	94.50	23,500
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	28	94.72	23,659

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.22	159
Domestic	--	--	--
Stock	25	0.5181	105
Irrigation	27	94.50	23,500
Mining	--	--	--
Recreation	--	--	--
Wildlife	6	0.006	4
Other	--	--	--
Totals	59	95.2441	23,768

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Kane Springs Valley

Basin No. N-206

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahrnagat Valley

State Nevada

Basin Name White River Valley

Basin No. N-207

Location: From T 3N to T 16N and R 58E to R 63E

*Estimated Annual Surface Water Runoff 26,000 AFY

*Estimated Annual Natural Groundwater Recharge 77,000 AFY

*Estimated Annual Natural Groundwater Discharge 77,000 AFY

*Estimated Perennial Groundwater Yield 37,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, B33

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>8</u>	<u>16.8844</u>	<u>8,061</u>
Certificates & Proofs	<u>64</u>	<u>122.7221</u>	<u>42,954</u>
Total Surface Water	<u>72</u>	<u>139.6065</u>	<u>51,015</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>108</u>	<u>439.2501</u>	<u>140,772</u>
Certificates & Proofs	<u>31</u>	<u>56.2838</u>	<u>31,577</u>
Total Groundwater	<u>139</u>	<u>495.5339</u>	<u>172,349</u>

Total Surface and Ground

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>116</u>	<u>456.1345</u>	<u>148,833</u>
Certificates & Proofs	<u>95</u>	<u>179.0059</u>	<u>74,531</u>
Total G&S	<u>211</u>	<u>635.1404</u>	<u>223,364</u>

State Nevada

Basin Name White River Valley Basin No. N-207

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	63	112.9425	42,431
State Government	9	26.657	8,584
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	72	139.6065	51,015

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	139	495.5339	172,349
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	139	495.5339	172,349

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	63	608.4834	214,780
State Government	9	26.657	8,584
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	211	635.1404	223,364

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name White River Valley

Basin No. N-207

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	3	1.248	786
Domestic	3	0.0410	29
Stock	14	2.5522	724
Irrigation	49	131.5653	47,456
Mining	-	-	-
Recreation	-	-	-
Wildlife	2	4.2000	2,020
Other	1	-	-
Totals	72	139.6065	51,015

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	7	21.7000	15,628
Domestic	3	0.0731	53
Stock	7	0.1682	70
Irrigation	122	473.5926	156,598
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	139	495.5339	172,349

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	10	22.9480	16,414
Domestic	6	0.1141	82
Stock	21	2.7204	794
Irrigation	171	605.1579	204,054
Mining	-	-	-
Recreation	-	-	-
Wildlife	2	4.2000	2,020
Other	1	-	-
Totals	211	635.1404	223,364

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name White River Valley

Basin No. N-207

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahranaagat Valley

State Nevada

Basin Name Pahroc Valley

Basin No. N-208

Location: From T 3S to T 5N and R 60E to R 63E

*Estimated Annual Surface Water Runoff 1,800 AFY
*Estimated Annual Natural Groundwater Recharge 42,200 AFY
*Estimated Annual Natural Groundwater Discharge 42,000 AFY
*Estimated Perennial Groundwater Yield 21,000 AFY
*Estimated Transitional Storage Reserve N/A AF
*Source WPR3, R21, B33

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>0.022</u>	<u>16</u>
Certificates & Proofs	<u>9</u>	<u>0.0939</u>	<u>62</u>
Total Surface Water	<u>10</u>	<u>0.1159</u>	<u>78</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>5.07</u>	<u>2,028</u>
Certificates & Proofs	<u>1</u>	<u>0.025</u>	<u>18</u>
Total Groundwater	<u>7</u>	<u>5.095</u>	<u>2,046</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>5.092</u>	<u>2,044</u>
Certificates & Proofs	<u>10</u>	<u>0.1189</u>	<u>80</u>
Total G&S	<u>17</u>	<u>5.2109</u>	<u>2,124</u>

State Nevada

Basin Name Pahroc Valley Basin No. N-208

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	10	0.1159	78
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	10	0.1159	78

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	5	3.095	600
State Government	2	2.00	1,446
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	7	5.095	2,046

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	15	3.2109	678
State Government	2	2.000	1,446
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	17	5.2109	2,124

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Pahroc Valley

Basin No. N-208

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	10	0.1159	78
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>10</u>	<u>0.1159</u>	<u>78</u>

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	3	0.095	58
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	<u>4</u>	<u>5.00</u>	<u>1,988</u>
Totals	<u>7</u>	<u>5.095</u>	<u>2,046</u>

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	13	0.2109	136
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	<u>4</u>	<u>5.00</u>	<u>1,988</u>
Totals	<u>17</u>	<u>5.2109</u>	<u>2,124</u>

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Pahranagat Valley

Basin No. N-209

Location: From T 2S to T 9S and R 58E to R 63E

*Estimated Annual Surface Water Runoff 1800 including N-208 AFY

*Estimated Annual Natural Groundwater Recharge 59,800 AFY

*Estimated Annual Natural Groundwater Discharge 55,000 AFY

*Estimated Perennial Groundwater Yield 25,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source WPR3, R21, B33

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>9</u>	<u>49.85</u>	<u>6,876</u>
Certificates & Proofs	<u>59</u>	<u>64.19</u>	<u>22,114</u>
Total Surface Water	<u>68</u>	<u>114.04</u>	<u>28,990</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>28</u>	<u>86.40</u>	<u>29,722</u>
Certificates & Proofs	<u>8</u>	<u>8.80</u>	<u>744</u>
Total Groundwater	<u>36</u>	<u>95.20</u>	<u>30,466</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>37</u>	<u>136.25</u>	<u>36,598</u>
Certificates & Proofs	<u>67</u>	<u>72.99</u>	<u>22,858</u>
Total G&S	<u>104</u>	<u>209.24</u>	<u>59,456</u>

State Nevada

Basin Name Pahranagat Valley Basin No. N-209

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	66	79.41	27,089
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>2</u>	<u>34.63</u>	<u>1,301</u>
	68	114.04	28,990

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	29	69.46	25,853
State Government	4	15.74	270
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>3</u>	<u>10.00</u>	<u>4,343</u>
Total	36	95.20	30,466

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	95	148.87	53,542
State Government	4	15.74	270
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>5</u>	<u>44.63</u>	<u>5,644</u>
Totals	104	209.24	59,456

¹These totals include all Applications, Permits, Certificates and Proofs

State Nevada

Basin Name Pahranagat Valley Basin No. N-209

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	30	1.458	1,045
Irrigation	37	107.957	26,644
Mining	--	--	--
Recreation	--	--	--
Wildlife	1	4.63	1,301
Other	--	--	--
Totals	68	114.04	28,990

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	3.013	2,181
Domestic	1	0.133	96
Stock	3	0.185	116
Irrigation	26	63.369	10,337
Mining	--	--	--
Recreation	2	22.50	16,288
Wildlife	2	6.0	1,448
Other	--	--	--
Totals	36	95.20	30,466

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	2	3.013	2,181
Domestic	1	0.133	96
Stock	33	1.643	1,161
Irrigation	63	171.326	36,981
Mining	--	--	--
Recreation	2	22.50	16,288
Wildlife	2	10.63	2,749
Other	--	--	--
Totals	104	209.24	59,456

¹These totals include all Applications, Permits, Certificates and Proofs.

State Nevada

Basin Name Pahranagat Valley

Basin No. N-209

NOTES:

1. In the following valleys within the MX area groundwater is believed to discharge to the deep carbonate system. Depth to groundwater is often great and perennial groundwater yield is limited by economics of pumping.

N-171 Coal Valley

N-172 Garden Valley

N-180 Cave Valley

N-181 Dry Lake Valley

N-182 Delamar Valley

N-206 Kane Springs Valley

N-207 White River Valley

N-209 Pahranagat Valley

2. Six groundwater permits were not included because of a lack of data in the Abstract by which to determine type of use, rate, duty or annual use.
3. Irrigation duty was based on 4 ac-ft/ac where acreage was indicated and where acreage was not given duty was based on the stated rate for 6 months.

UTAH

State Utah

Basin Name Snake Valley

Basin No. U-4

Location: From T 10S to T 33S and R 14W to R 20W

*Estimated Annual Surface Water Runoff N/A AFY
 *Estimated Annual Natural Groundwater Recharge 74,000 ** AFY
 *Estimated Annual Natural Groundwater Discharge 79,000 ** AFY
 *Estimated Perennial Groundwater Yield 25,000 - 50,000 AFY
 *Estimated Transitional Storage Reserve N/A AF
 *Source 813G

** Includes Nevada

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>3</u>	<u>3.3520</u>	<u>1,336</u>
Certificates & Proofs	<u>17</u>	<u>78.0931</u>	<u>11,964</u>
Total Surface Water	<u>20</u>	<u>81.4451</u>	<u>13,300</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>87</u>	<u>179.7710</u>	<u>39,945</u>
Certificates & Proofs	<u>47</u>	<u>41.7048</u>	<u>10,121</u>
Total Groundwater	<u>134</u>	<u>221.4758</u>	<u>50,066</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>90</u>	<u>183.1230</u>	<u>41,281</u>
Certificates & Proofs	<u>64</u>	<u>119.7979</u>	<u>22,085</u>
Total G&S	<u>154</u>	<u>302.9209</u>	<u>63,366</u>

State Utah

Basin Name Snake Valley Basin No. U-4

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	20	81.4451	13,300
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	20	81.4451	13,300

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	121	221.1438	49,860
State Government	2	0.0370	27
Local Governmental Entities	3	0.0530	30
Special Districts	-	-	-
Native American	-	-	-
Federal Government	8	0.2420	149
Total	134	221.4758	50,066

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	141	302.5889	63,160
State Government	2	0.0370	27
Local Governmental Entities	3	0.0530	30
Special Districts	-	-	-
Native American	-	-	-
Federal Government	8	0.2420	149
Totals	154	302.9209	63,366

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Snake Valley Basin No. U-4

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	1	.2500	67
Stock	10	.1351	83
Irrigation	9	81.0600	13,150
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	20	81.4451	13,300

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	24	0.7880	172
Stock	31	0.8061	358
Irrigation	75	219.2817	49,102
Mining	3	0.4000	289
Recreation	-	-	-
Wildlife	-	-	-
Other	1	0.2000	145
Totals	134	221.4758	50,066

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	25	1.0380	239
Stock	41	0.9412	441
Irrigation	84	300.3417	62,252
Mining	3	0.4000	289
Recreation	-	-	-
Wildlife	-	-	-
Other	1	0.2000	145
Totals	154	302.9209	63,366

¹These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Pine Valley Basin No. U-5

Location: From T 23S to T 30S and R 15W to R 19W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 21,000 AFY

*Estimated Annual Natural Groundwater Discharge 21,000 AFY

*Estimated Perennial Groundwater Yield < 5,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source TP51; 813G

I. WATER RIGHTS BY LEGAL STATUS

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>11</u>	<u>5.6695</u>	<u>2,416</u>
Certificates & Proofs	<u>14</u>	<u>34.8233</u>	<u>8,995</u>
Total Surface Water	<u>25</u>	<u>40.4928</u>	<u>11,411</u>

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>5</u>	<u>27.667</u>	<u>17,266</u>
Certificates & Proofs	<u>7</u>	<u>0.4078</u>	<u>221</u>
Total Groundwater	<u>12</u>	<u>28.0748</u>	<u>17,487</u>

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>16</u>	<u>33.3365</u>	<u>19,682</u>
Certificates & Proofs	<u>21</u>	<u>35.2311</u>	<u>9,216</u>
Total G&S	<u>37</u>	<u>68.5676</u>	<u>28,898</u>

State Utah

Basin Name Pine Valley Basin No. U-5

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	18	39.3913	10,613
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>7</u>	<u>1.1015</u>	<u>798</u>
Total	25	40.4928	11,411

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	9	27.9255	17,388
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>3</u>	<u>0.1493</u>	<u>99</u>
Total	12	28.0748	17,487

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	27	67.3168	28,001
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	<u>10</u>	<u>1.1643</u>	<u>897</u>
Totals	37	68.4811	28,898

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Pine Valley Basin No. U-5

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	2	6.0	4,344
Stock	17	10.4270	5,947
Irrigation	6	24.0658	1,120
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	25	40.4928	11,411

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.10	37
Domestic	1	0.08	2
Stock	3	0.1224	80
Irrigation	3	6.1114	1,688
Mining	4	21.661	15,680
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	12	28.0748	17,487

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.1	37
Domestic	3	6.08	4,346
Stock	20	10.5494	6,027
Irrigation	9	30.1772	2,808
Mining	4	21.661	15,680
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	37	68.5676	28,898

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name White Valley

Basin No. U-6

Location: From T 13S to T 23S and R 13W to R 17W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 40,000 AFY

*Estimated Annual Natural Groundwater Discharge 40,000 AFY

*Estimated Perennial Groundwater Yield < 5,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source TP 56; 813G

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>.0178</u>	<u>13</u>
Certificates & Proofs	<u>1</u>	<u>3.0200</u>	<u>2,186</u>
Total Surface Water	<u>3</u>	<u>3.0378</u>	<u>2,199</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>0.30</u>	<u>53</u>
Certificates & Proofs	<u>3</u>	<u>0.0690</u>	<u>50</u>
Total Groundwater	<u>5</u>	<u>0.3690</u>	<u>103</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>4</u>	<u>0.3178</u>	<u>66</u>
Certificates & Proofs	<u>4</u>	<u>3.089</u>	<u>2,236</u>
Total G&S	<u>8</u>	<u>3.4068</u>	<u>2,302</u>

State Utah

Basin Name White Valley Basin No. U-6

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	1	3.0200	2,186
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	2	.0178	13
Total	3	3.0378	2,199

Groundwater

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	0.30	53
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	3	0.069	50
Total	5	0.369	103

Total Surface and Groundwater

	<u>No. ¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	3	3.32	2,239
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	5	0.0868	63
Totals	8	3.4068	2,302

¹ These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name White Valley Basin No. U-6

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	2	.0178	13
Irrigation	-	-	-
Mining	1	3.0200	2,186
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>3</u>	<u>3.0378</u>	<u>2,199</u>

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	4	0.169	82
Irrigation	1	0.20	21
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>5</u>	<u>0.369</u>	<u>103</u>

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	6	0.1868	95
Irrigation	1	0.20	21
Mining	1	3.02	2,186
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	<u>8</u>	<u>3.4068</u>	<u>2,302</u>

¹These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Fish Springs Flat

Basin No. U-7

Location: From T 8S to T 15S and R 11W to R 14W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield 25,000-50,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>10.0109</u>	<u>3,975</u>
Certificates & Proofs	<u>4</u>	<u>15.0030</u>	<u>2,602</u>
Total Surface Water	<u>6</u>	<u>25.0139</u>	<u>6,577</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>1.1567</u>	<u>831</u>
Certificates & Proofs	<u>4</u>	<u>0.1298</u>	<u>94</u>
Total Groundwater	<u>10</u>	<u>1.2865</u>	<u>925</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>8</u>	<u>11.1676</u>	<u>4,806</u>
Certificates & Proofs	<u>8</u>	<u>15.1328</u>	<u>2,696</u>
Total G&S	<u>16</u>	<u>26.3004</u>	<u>7,502</u>

State Utah

Basin Name Fish Springs Flat Basin No. U-7

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	6	25.0139	6,577
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	--	--	--
Total	<u>6</u>	<u>25.0139</u>	<u>6,577</u>

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	2	1.014	734
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>8</u>	<u>0.2725</u>	<u>191</u>
Total	10	1.2865	925

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	8	26.0279	7,311
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>8</u>	<u>0.2725</u>	<u>191</u>
Totals	16	26.3004	7,502

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Fish Springs Flat Basin No. U-7

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	3	.0139	10
Irrigation	1	10.0000	3,967
Mining	--	--	--
Recreation	--	--	--
Wildlife	2	15.0000	2,600
Other	--	--	--
Totals	6	25.0139	6,577

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	8	0.2725	191
Irrigation	--	--	--
Mining	2	1.014	734
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	10	1.3865	925

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	11	0.2864	201
Irrigation	1	10.0	3,967
Mining	2	1.014	734
Recreation	--	--	--
Wildlife	2	15.0	2,600
Other	--	--	--
Totals	16	26.3004	7,502

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Dugway Valley

Basin No. U-8

Location: From T 8S to T 12S and R 9W to R 12W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield 5,000-25,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	No.	Surface Water Rate, cfs	Annual, AFY
Permits & Applications	<u>1</u>	<u>.0150</u>	<u>11</u>
Certificates & Proofs	<u>--</u>	<u>--</u>	<u>--</u>
Total Surface Water	<u>1</u>	<u>.0150</u>	<u>11</u>

	No.	Groundwater Rate, cfs	Annual, AFY
Permits & Applications	<u>3</u>	<u>0.530</u>	<u>384</u>
Certificates & Proofs	<u>2</u>	<u>0.585</u>	<u>423</u>
Total Groundwater	<u>5</u>	<u>1.115</u>	<u>807</u>

	No.	Total Surface and Groundwater Rate, cfs	Annual, AFY
Permits & Applications	<u>4</u>	<u>0.545</u>	<u>395</u>
Certificates & Proofs	<u>2</u>	<u>0.585</u>	<u>423</u>
Total G&S	<u>6</u>	<u>1.130</u>	<u>818</u>

State Utah

Basin Name Dugway Valley Basin No. U-8

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	--	--	--
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>.0150</u>	<u>11</u>
Total	<u>1</u>	<u>.0150</u>	<u>11</u>

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.50	362
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>4</u>	<u>0.615</u>	<u>445</u>
Total	<u>5</u>	<u>1.115</u>	<u>807</u>

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	0.50	362
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>5</u>	<u>0.630</u>	<u>456</u>
Totals	<u>6</u>	<u>1.130</u>	<u>818</u>

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Dugway Valley Basin No. U-8

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	1	.0150	11
Irrigation	--	--	--
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	1	.0150	11

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.545	394
Domestic	--	--	--
Stock	3	0.07	51
Irrigation	--	--	--
Mining	1	0.50	362
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	5	1.115	807

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	0.545	394
Domestic	--	--	--
Stock	4	0.085	62
Irrigation	--	--	--
Mining	1	0.50	362
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	6	1.130	818

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Government Creek Valley

Basin No. 11-9

Location: From T 6S to T 12S and R 6W to R 11W

*Estimated Annual Surface Water Runoff N/A AFY
 *Estimated Annual Natural Groundwater Recharge N/A AFY
 *Estimated Annual Natural Groundwater Discharge N/A AFY
 *Estimated Perennial Groundwater Yield 5,000-25,000 AFY
 *Estimated Transitional Storage Reserve N/A AF
 *Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>1</u>	<u>.0027</u>	<u>2</u>
Certificates & Proofs	<u>2</u>	<u>2.9200</u>	<u>1,476</u>
Total Surface Water	<u>3</u>	<u>2.9227</u>	<u>1,478</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>15</u>	<u>108.79</u>	<u>27,507</u>
Certificates & Proofs	<u>9</u>	<u>14.7843</u>	<u>5,558</u>
Total Groundwater	<u>24</u>	<u>123.5743</u>	<u>33,065</u>

	No.	Rate, cfs	Annual, AFY
Permits & Applications	<u>16</u>	<u>108.7927</u>	<u>27,509</u>
Certificates & Proofs	<u>11</u>	<u>17.7043</u>	<u>7,034</u>
Total G&S	<u>27</u>	<u>126.4970</u>	<u>34,543</u>

State Utah

Basin Name Government Creek Valley Basin No. 11-9

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	2	2.9200	1,476
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>1</u>	<u>.0027</u>	<u>2</u>
Total	3	2.9227	1,478

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	17	116.34	27,828
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>7</u>	<u>7.2343</u>	<u>5,237</u>
Total	24	123.5743	33,065

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	19	119.26	29,304
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	<u>8</u>	<u>7.237</u>	<u>5,239</u>
Totals	27	126.497	34,543

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Government Creek Valley Basin No. U-9

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	2	.1027	74
Irrigation	1	2.8200	1,404
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	3	2.9227	1,478

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	5	7.179	5,197
Domestic	--	--	--
Stock	2	0.0553	40
Irrigation	17	116.34	27,828
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	24	123.5743	33,065

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	5	7.179	5,197
Domestic	--	--	--
Stock	4	0.1580	114
Irrigation	18	119.16	29,232
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	27	126.4970	34,543

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Sevier Desert

Basin No. U-46

Location: From T 10S to T 24S and R 2W to R 13W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 186,000 AFY

*Estimated Annual Natural Groundwater Discharge 140,000-180,000 AFY

*Estimated Perennial Groundwater Yield >100,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>16</u>	<u>10.4322</u>	<u>4,239</u>
Certificates & Proofs	<u>19</u>	<u>24.1579</u>	<u>8,458</u>
Total Surface Water	<u>35</u>	<u>34.5901</u>	<u>12,697</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>876</u>	<u>1,430.7710</u>	<u>929,134</u>
Certificates & Proofs	<u>554</u>	<u>144.3059</u>	<u>42,374</u>
Total Groundwater	<u>1,430</u>	<u>1,575.0769</u>	<u>971,508</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>892</u>	<u>1,441.2032</u>	<u>933,373</u>
Certificates & Proofs	<u>573</u>	<u>168.4638</u>	<u>50,832</u>
Total G&S	<u>1,465</u>	<u>1,609.6670</u>	<u>984,205</u>

State Utah

Basin Name Sevier Desert Basin No. U-46

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	14	34.1242	12,414
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	21	.4659	283
Total	35	34.5901	12,697

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1,399	1,538.685	953,854
State Government	4	25.620	11,483
Local Governmental Entities	11	9.9336	5,931
Special Districts	--	--	--
Native American	--	--	--
Federal Government	16	.9393	240
Total	1,430	1,575.0769	971,508

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1,413	1,572.8092	966,263
State Government	4	25.6200	11,483
Local Governmental Entities	11	9.9336	5,931
Special Districts	--	--	--
Native American	--	--	--
Federal Government	37	1.3042	523
Totals	1,465	1,609.6670	984,205

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Sevier Desert Basin No. U-46

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	1	.090	65
Stock	26	.9631	553
Irrigation	8	33.5370	12,079
Mining	--	--	--
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	35	34.5901	12,697

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	6	9.8234	5,852
Domestic	975	22.1066	4,504
Stock	317	6.4929	2,556
Irrigation	109	536.2378	237,674
Mining	3	20.0011	11,180
Recreation	--	--	--
Wildlife	3	.0280	15
Other	17	980.3871	709,727
Totals	1,430	1,575.0769	971,508

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	6	9.8234	5,852
Domestic	976	22.1966	4,569
Stock	343	7.4560	3,109
Irrigation	117	569.7748	249,753
Mining	3	20.0011	11,180
Recreation	--	--	--
Wildlife	3	.028	15
Other	17	980.3871	709,727
Totals	1,465	1,609.6670	984,205

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Sevier Desert

Basin No. U-46

NOTES:

Rights for the major diversions from the Sevier River were not found in the State Engineer's files. Mr. Roger Walker, the Lower Sevier River Commissioner was interviewed and the following was ascertained:

1. The Sevier River has been adjudicated (Cox Decree)
2. Rights exceed the available surface flows-
 - a. Flows in the Sevier River near Delta average about 125,000 afy with a peak of about 175,000 afy.
 - b. About 77,000 acres have irrigation rights, but only 55,000 to 60,000 maximum have actually been farmed. Thus the available duty is about 2.27 acre-feet/acre.
3. Surface rights are supplemented by pumped groundwater.
4. Irrigation drainages flow to Topaz Slough and Sevier Lake.
5. Water quality of the Sevier River is poor as it has a total dissolved solids of more than 1,000 ppm. Groundwater is exclusively used for potable, stock, and small irrigation (family gardens) demands.

Chevron Oil Company is the major groundwater applicant. They have requested a diversion of 4,900 cfs of which 980 cfs is to be beneficially consumed for several electric power plants of 24 to 200 MW. The Fumarole Buttes, located about 15 miles northwest from Delta, is the area of diversion.

In compiling the groundwater rights, it was assumed that Chevron's annual diversion would be 4,900 cfs, but that their beneficial annual right would be equivalent to 980 cfs. The remaining 3,920 cfs to be returned to "... unknown at this time, but in vicinity of wells." Based upon a consumption of 980 cfs annually, 709,520 afy would be consumed. This represents about 76% of the total groundwater (applications and permits) compiled.

State Utah

Basin Name Dry Lake Subarea

Basin No. U-46(A)

Location: From T 17S to T 25S and R 10W to R 14W

*Estimated Annual Surface Water Runoff N/A AFY
 *Estimated Annual Natural Groundwater Recharge N/A AFY
 *Estimated Annual Natural Groundwater Discharge N/A AFY
 *Estimated Perennial Groundwater Yield 5,000-25,000 AFY
 *Estimated Transitional Storage Reserve N/A AF

*Source 913G

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>5.1476</u>	<u>3,664</u>
Certificates & Proofs	<u>4</u>	<u>.0144</u>	<u>11</u>
Total Surface Water	<u>11</u>	<u>5.1620</u>	<u>3,675</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>15.000</u>	<u>10,859</u>
Certificates & Proofs	<u>3</u>	<u>0.3616</u>	<u>68</u>
Total Groundwater	<u>4</u>	<u>15.3616</u>	<u>10,927</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>8</u>	<u>20.1476</u>	<u>14,523</u>
Certificates & Proofs	<u>7</u>	<u>0.3760</u>	<u>70</u>
Total GWS	<u>15</u>	<u>20.5236</u>	<u>14,602</u>

State Utah

Basin Name Dry Lake Subarea Basin No. U-46(A)

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	6	5.0194	3,635
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	5	.1426	40
Total	11	5.1620	3,675

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	3	15.3116	10,891
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	1	0.05	36
Total	4	15.3616	10,927

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	9	20.331	14,526
State Government	--	--	--
Local Governmental Entities	--	--	--
Special Districts	--	--	--
Native American	--	--	--
Federal Government	6	0.1926	76
Totals	15	20.5236	14,602

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Dry Lake Subarea

Basin No. U-46(A)

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	10	.1620	55
Irrigation	--	--	--
Mining	1	5.0000	3,620
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	11	5.1620	3,675

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	3	0.3616	68
Irrigation	--	--	--
Mining	1	15.000	10,859
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	4	15.3616	10,927

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	--	--	--
Domestic	--	--	--
Stock	13	0.5236	123
Irrigation	--	--	--
Mining	2	20.00	14,479
Recreation	--	--	--
Wildlife	--	--	--
Other	--	--	--
Totals	15	20.5236	14,602

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Milford Valley

Basin No. U-50

Location: From T 23S to T 31S and R 6W to R 14W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield 25,000 - 50,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>25</u>	<u>337.4389</u>	<u>30,720</u>
Total Surface Water	<u>25</u>	<u>337.4389</u>	<u>30,720</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>6</u>	<u>18,1650</u>	<u>1,100</u>
Total Groundwater	<u>6</u>	<u>18,1650</u>	<u>1,100</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>31</u>	<u>355.6039</u>	<u>31,820</u>
Total G&S	<u>31</u>	<u>355.6039</u>	<u>31,820</u>

State Utah

Basin Name Milford Valley Basin No. U-50

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	19	337.2390	30,543
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	6	.2449	177
Total	25	337.4389	30,720

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	6	18.1650	1,100
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	6	18.1650	1,100

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	25	355.4040	31,643
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	6	.2449	177
Totals	31	355.6489	31,820

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah
 Basin Name Milford Valley Basin No. U-50

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	2	.0604	44
Stock	16	.3281	237
Irrigation	7	337.0954	30,439
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	25	337.4839	30,720

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	3	.2500	18
Irrigation	3	17.915	1,082
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	6	18.1650	1,100

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	2	.0604	44
Stock	19	.5781	255
Irrigation	10	355.0104	31,521
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	31	355.6489	31,820

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Lund

Basin No. U-52

Location: From T 29S to T 37S and R 10W to R 17W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield 5,000 - 25,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	No.	Rate, cfs	Annual, AFY
Permits & Applications	-	-	-
Certificates & Proofs	25	.4562	186
Total Surface Water	25	.4562	186

	No.	Rate, cfs	Annual, AFY
Permits & Applications	-	-	-
Certificates & Proofs	39	0.875	368
Total Groundwater	39	0.875	368

	No.	Rate, cfs	Annual, AFY
Permits & Applications	-	-	-
Certificates & Proofs	64	1.3332	554
Total G&S	64	1.3332	554

State Utah

Basin Name Lund District Basin No. U-52

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	10	.1062	86
State Government	2	.0330	34
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	13	.3190	66
Totals	25	.4582	186

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	34	0.821	328
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	5	.054	40
Total	39	0.875	368

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	44	0.9272	414
State Government	2	0.033	34
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	18	0.373	106
Totals	64	1.3332	554

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Lund District Basin No. U-52

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	23	.4416	173
Irrigation	2	.0176	13
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	25	.4582	186

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	5	0.004	3
Stock	30	0.321	232
Irrigation	4	0.55	133
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	39	0.875	368

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	5	0.004	3
Stock	53	0.7616	405
Irrigation	6	0.5676	146
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	64	1.3332	554

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Beryl-Enterprise District Basin No. U-53

Location: From T 33S to T 38S and R 14W to R 20W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield 5,000 - 25,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>3</u>	<u>.3250</u>	<u>124</u>
Total Surface Water	<u>3</u>	<u>.3250</u>	<u>124</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>-</u>	<u>-</u>	<u>-</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>3</u>	<u>0.325</u>	<u>124</u>
Total G&S	<u>3</u>	<u>0.325</u>	<u>124</u>

State Utah

Basin Name Beryl-Enterprise Dist. Basin No. 11-53

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	3	.3250	124
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	3	.3250	124

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	-	-	-
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	-	-	-

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	3	0.325	124
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	3	0.325	124

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Beryl-Enterprise District Basin No. U-53

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	1	.0050	4
Irrigation	1	.2200	48
Mining	1	.1000	72
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	3	.3250	124

Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	-	-	-
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	-	-	-

Total Surface & Groundwater

<u>Use</u>	<u>Total No.⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	1	0.005	4
Irrigation	1	0.22	48
Mining	1	0.10	72
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	3	0.325	124

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Wah Wah Valley

Basin No. U-54

Location: From T 22S to T 29S and R 13W to R 16W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge N/A AFY

*Estimated Annual Natural Groundwater Discharge N/A AFY

*Estimated Perennial Groundwater Yield < 5,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

Surface Water

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>6</u>	<u>7.8885</u>	<u>903</u>
Certificates & Proofs	<u>9</u>	<u>1.6102</u>	<u>251</u>
Total Surface Water	<u>15</u>	<u>9.4987</u>	<u>1,154</u>

Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>1</u>	<u>45.0000</u>	<u>32,576</u>
Certificates & Proofs	<u>1</u>	<u>0.0464</u>	<u>34</u>
Total Groundwater	<u>2</u>	<u>45.0464</u>	<u>32,610</u>

Total Surface and Groundwater

	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>7</u>	<u>52.8885</u>	<u>33,479</u>
Certificates & Proofs	<u>10</u>	<u>1.6566</u>	<u>285</u>
Total G&S	<u>17</u>	<u>54.5451</u>	<u>33,764</u>

State Utah

Basin Name Wah Wah Valley Basin No. U-54

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	12	9.4520	1,120
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	3	.0467	34
Totals	15	9.4987	1,154

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	1	45.00	32,576
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	1	0.0464	34
Total	2	45.0464	32,610

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	13	54.452	33,696
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	4	0.0931	68
Totals	17	54.5451	33,764

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Wah Wah Valley

Basin No. U-54

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	12	.1487	111
Irrigation	3	9.3500	1,043
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	15	9.4987	1,154

Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	1	0.0464	34
Irrigation	-	-	-
Mining	1	45.00	32,576
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	2	45.0464	32,610

Total Surface & Groundwater

<u>Use</u>	<u>Total No.</u> ⁽¹⁾	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	13	0.1951	145
Irrigation	3	9.35	1,043
Mining	1	45.0	32,576
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	17	54.5451	33,764

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Pleasant Valley

Basin No. U-194

Location: From T 12S to T 13S and R 18W to R 20W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 4,800** AFY

*Estimated Annual Natural Groundwater Discharge 3,000** AFY

*Estimated Perennial Groundwater Yield < 5,000 ** AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

** Includes Nevada

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>4</u>	<u>10.03</u>	<u>7,262</u>
Total Surface Water	<u>4</u>	<u>10.03</u>	<u>7,262</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>-</u>	<u>-</u>	<u>-</u>
Total Groundwater	<u>-</u>	<u>-</u>	<u>-</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>-</u>	<u>-</u>	<u>-</u>
Certificates & Proofs	<u>4</u>	<u>10.03</u>	<u>7,262</u>
Total G&S	<u>4</u>	<u>10.03</u>	<u>7,262</u>

State Utah

Basin Name Pleasant Valley Basin No. U-194

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	4	10.03	7,262
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	4	10.03	7,262

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	-	-	-
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	-	-	-

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	4	10.03	7,262
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Totals	4	10.03	7,262

¹ These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Pleasant Valley Basin No. U-194

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	-	-	-
Irrigation	-	-	-
Mining	4	10.03	7,262
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	4	10.03	7,262

Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	-	-	-
Irrigation	-	-	-
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	-	-	-

Total Surface & Groundwater

<u>Use</u>	<u>Total No. ⁽¹⁾</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	-	-	-
Irrigation	-	-	-
Mining	4	10.03	7,262
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	4	10.03	7,262

¹ These totals include all Applications, Permits, Certificates and Proofs.

State Utah

Basin Name Hamlin Valley

Basin No. U-196

Location: From T 25S to T 33S and R 18W to R 20W

*Estimated Annual Surface Water Runoff N/A AFY

*Estimated Annual Natural Groundwater Recharge 14,000 AFY

*Estimated Annual Natural Groundwater Discharge 10,400 AFY

*Estimated Perennial Groundwater Yield 5,000 - 25,000 AFY

*Estimated Transitional Storage Reserve N/A AF

*Source 813G

I. WATER RIGHTS BY LEGAL STATUS

	Surface Water		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>2</u>	<u>4.0180</u>	<u>2,909</u>
Certificates & Proofs	<u>14</u>	<u>.7517</u>	<u>278</u>
Total Surface Water	<u>16</u>	<u>4.7697</u>	<u>3,187</u>

	Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>22</u>	<u>69.265</u>	<u>18,553</u>
Certificates & Proofs	<u>6</u>	<u>1.0605</u>	<u>411</u>
Total Groundwater	<u>28</u>	<u>70.3255</u>	<u>18,964</u>

	Total Surface and Groundwater		
	<u>No.</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Permits & Applications	<u>24</u>	<u>73.283</u>	<u>21,462</u>
Certificates & Proofs	<u>20</u>	<u>1.8122</u>	<u>689</u>
Total GAS	<u>44</u>	<u>75.0952</u>	<u>22,151</u>

State Utah

Basin Name Hamlin Valley

Basin No. U-196

II. WATER RIGHTS BY OWNERSHIP

Surface Water

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprise	14	4.7406	3,157
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	2	.0291	30
Totals	16	4.7697	3,187

Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	28	70.3255	18,964
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	-	-	-
Total	28	70.3255	18,964

Total Surface and Groundwater

	<u>No.¹</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Individuals & Private Enterprises	42	75.0661	22,121
State Government	-	-	-
Local Governmental Entities	-	-	-
Special Districts	-	-	-
Native American	-	-	-
Federal Government	2	0.0291	30
Totals	44	75.0952	22,151

¹These totals include all Applications, Permits, Certificates and Proofs

State Utah

Basin Name Hamlin Valley Basin No. U-196

III. WATER RIGHTS BY TYPE OF USE

Surface Water

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	-	-	-
Domestic	-	-	-
Stock	13	.3107	206
Irrigation	2	.4590	85
Mining	1	4.0000	2,896
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	16	4.7697	3,187

Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	724
Domestic	3	0.052	20
Stock	6	0.1035	58
Irrigation	18	69.17	18,162
Mining	-	-	-
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	28	70.3255	18,964

Total Surface & Groundwater

<u>Use</u>	<u>Total No. (1)</u>	<u>Rate, cfs</u>	<u>Annual, AFY</u>
Municipal	1	1.0	724
Domestic	3	0.052	20
Stock	19	0.4142	264
Irrigation	20	69.629	18,246
Mining	1	4.00	2,896
Recreation	-	-	-
Wildlife	-	-	-
Other	-	-	-
Totals	44	75.0952	22,150

¹ These totals include all Applications, Permits, Certificates and Proofs.

HYDROLOGIC DATA REFERENCES

Nevada

- WPR3 State Engineer's Office, 1971, Nevada's Water Resources: State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources, Water Planning Report 3.
- R1 Eakin, T.E., 1960. Ground-water Appraisal of Newark Valley, White Pine County, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 1.
- R6 Eakin, T.E., 1962, Ground-water Appraisal of Diamond Valley, Eureka and Elko Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 6.
- R12 Eakin, T.E., 1962, Ground-water Appraisal of Ralston and Stonecabin Valleys, Nye County, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series Report 12.
- R13 Eakin, T.E., 1962, Ground-water Appraisal of Cave Valley in Lincoln and White Pine Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 13.
- R16 Eakin, T.E., 1963, Ground-water Appraisal of Dry Lake and Delmar Valleys, Lincoln County, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 16.
- R18 Eakin, T.E., 1963, Ground-water Appraisal of Garden and Coal Valleys, Lincoln and Nye Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-Water Resources - Reconnaissance Series, Report 18.
- R21 Eakin, T.E., 1963, Ground-water Appraisal of Pahrnagat and Pahroc Valleys, Lincoln and Nye Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 21.
- R24 Rush, F.E., and Eakin, T.E., 1963, Ground-water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources - Reconnaissance Series, Report 24.
- R30 Rush, F.E., and D.E. Everett, 1964, Ground-water Appraisal of Monitor, Antelope, and Kobeh Valleys, Nevada: State of Nevada, Department of Conservation and Natural Resources, Ground-water Resources - Reconnaissance Series, Report 30.
- R34 Hood, J.W., and F.E. Rush, 1965, Water-Resources Appraisal of the Snake Valley Area, Utah and Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 34.

- R42 Eakin, T.E., and others, 1967, Water-Resources Appraisal of Steptoe Valley, White Pine and Elko Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 42.
- R45 Rush, F.E., 1968, Water-Resources Appraisal of Clayton Valley - Stonewall Flat Area, Nevada and California: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 45.
- R50 Rush, F.E., 1968, Water-Resources Appraisal of the Lower Moapa - Lake Mead Area, Clark County, Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 50.
- R54 Rush, F.E., 1970, Regional Ground-water Systems in the Nevada Test Site Area, Nye, Lincoln, and Clark Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 54.
- R60 Van Denburgh, A.S., and F.E. Rush, 1974, Water-Resources Appraisal of Railroad and Penoyer Valleys, East-Central, Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources - Reconnaissance Series, Report 60.
- B12 Eakin, T.E., and others, 1951, Contributions to the Hydrology of Eastern Nevada: State of Nevada, Office of the State Engineer, Water Resources Bulletin No. 12.
- B33 Eakin, T.E., 1966, A Regional Interbasin Ground-Water System in the White River Area, Southeastern Nevada: State of Nevada, Department of Conservation and Natural Resources, Water Resources Bulletin No. 33
- B35 Harrill, J.R. and R.D. Lamke, 1968, Hydrologic Response to Irrigation Pumping in Diamond Valley, Eureka and Elko Counties, Nevada, 1950-65: State of Nevada, Department of Conservation and Natural Resources, Water Resources Bulletin No. 35.
- B41 Rush, F.E. and C.V. Schroer, 1970, Water Resources of Big Smokey Valley, Lander, Nye and Esmeralda Counties, Nevada: State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources, Water Resources Bulletin No. 41.

Utah

- TP51 Stephens, J.C., 1976, Hydrologic Reconnaissance of the Pine Valley Drainage Basin, Millard, Beaver, and Iron Counties, Utah: State of Utah, Department of Natural Resources Technical Publication No. 51.
- TP56 Stephens, J.C., 1977, Hydrologic Reconnaissance of the Tule Valley Drainage Basin, Juab and Millard Counties, Utah: Department of Natural Resources Technical Publication No. 56.
- 813G Eakin, T.E., D. Price, and J.R. Harrill, 1976, Summary Appraisals of the Nation's Groundwater Resources - Great Basin Region: U.S. Department of Interior, Geological Survey Professional Paper 813G.

APPENDIX

March 17, 1960

Gerald Stoker
Division of Water Rights
P.O. Box 506
Cedar City, UT 84720

Dear Mr. Stoker:

Please recall our telephone conversation this date concerning our efforts to compile water rights and to estimate hydrological conditions within the siting areas of the proposed MX system.

Enclosed is a copy of a map showing USGS basins within the Great Basin. I have marked the proposed MX area in Utah on the map (yellow color) and the numbers shown are USGS's.

Utah processes and files water rights by area which are numbered. We would like to define the Utah water-rights areas, in entirety, that are at least a part of the MX area. Please sketch these areas on the enclosed map and number them for us.

You may also be able to help us by estimating hydrological aspects of the valleys indicated by the USGS system or by the Utah areas. We are interested in the following information:

1. Estimated annual surface water runoff.
2. Estimated annual natural groundwater recharge.
3. Estimated annual natural groundwater discharge.
4. Estimated perennial groundwater yield.
5. Estimated transitional storage reserve.

I have enclosed two photocopied pages extracted from USGS professional paper 316-B which roughly defines perennial yield and transitional storage. This may be helpful for you, as I realize the information we are seeking is rather vague. As I mentioned on the phone, we have copies of State of Utah, DNR's Technical Publications 51 and 52 which cover USGS valleys 5 and 6. The rest of the area is unknown to us, and if you are aware of any reports which may help us, we would appreciate knowing about them. Assuming that nothing is available, we would appreciate your best guess.

We truly appreciate whatever help you can give us. I'll plan to call you during the week of the 31st, and we can discuss whatever problems or questions may arise.

Sincerely,

Dennis Clark

BC/ke

For example, if about 160,000 acre-feet (197 hm³) of ground water were used for irrigation, roughly 25 percent, or 40,000 acre-feet (49 hm³), would be returned to the ground-water system by deep percolation. The net ground-water withdrawal thus would be 370,000 acre-feet (456 hm³) during years of minimum surface-water supplies. Some of the water withdrawn for industry, public supply, and other uses also probably would return to the ground-water body. Nevertheless, the net withdrawals still would be substantial and periodically would put a severe stress on the ground-water system. Ideally, the required well field or fields would be distributed and designed to minimize potential problems of local overdraft, depletion of flow in the lower reaches of streams and wetland areas, and local deterioration of water quality.

About 2 million acre-feet (2,470 hm³) of water is stored in the upper 100 feet (30 m) of saturated valley fill, so ample stored water is available to supply a deficit of 370,000 acre-feet (456 hm³) per year for several years. Withdrawals of this magnitude would last only during the dry periods and recovery probably could be expected during the intervening wet cycles. Recovery could be augmented by artificial recharge if necessary by utilizing excessive wet-period streamflow.

A system of this type also would be available to provide an emergency public supply during a disaster that might destroy or cause extensive damage to the surface-water-supply system.

DEVELOPMENT BY PUMPING GROUND WATER ONLY

WITHDRAWAL PLANNED TO MAINTAIN SOME NATURAL DISCHARGE

In many areas in the Great Basin Region, some natural ground-water discharge is beneficial. It may be desirable to maintain this discharge when the area is developed, particularly where extensive areas of wildlife habitat are sustained primarily by ground-water discharge. Ruby Valley, Nev., is an example of this type of area. The valley is a topographically closed basin about 60 miles (97 km) long and 8 to 12 miles (13 to 19 km) wide. It receives some subsurface inflow from adjacent Huntington Valley. Perennial yield is estimated to be about 58,000 acre-feet (72 hm³) per year, and each foot of dewatering throughout the valley-fill reservoir would provide about 33,000 acre-feet (41 hm³) of stored ground water. Because of these large quantities of water, the valley is classed among those with the highest potential for development (p. 17). However, a large marsh in the south half of the valley has been designated as the Ruby Lake National Wildlife Refuge. Almost half the ground-water resource is consumed by evapotranspiration in and near the Refuge. Any large-scale ground-water development would have to be strategically situated in the northern part of the valley, where pumping would have minimal effect on the marsh area. Consumptive use of the pumped water may eventually

have to be limited to an amount equal to evapotranspiration in the northern part of the valley that could be captured by pumping. Eakin and others (1951, p. 90) estimated that about 20,000 acre-feet (25 hm³) per year could be captured by pumping in the north end of the valley. If this water was used primarily for irrigation, perhaps one-third of the pumpage would not be consumed and would recirculate to the ground-water reservoir. Under these conditions, an annual pumpage of nearly 30,000 acre-feet (37 hm³) could be sustained in the northern part of the valley, and the Wildlife Refuge at the south end could be maintained at near-natural conditions. Detailed cause and effect studies would be required after some significant development, but before the valley approached full development. Analytical models of the ground-water reservoir would be useful in predicting long-term effects of pumping, including salt buildup from recycling, and in refining the initial estimate of allowable pumpage.

DEVELOPMENT DESIGNED TO CAPTURE ALL NATURAL DISCHARGE

Where ground water is the principal source of supply and availability of water is the limiting factor to development, it is desirable to plan developments so that all natural discharge will be captured. Ideally, this would involve siting wells strategically in and near areas of ground-water discharge so that the natural discharge could be captured with only minimal water-level declines and storage depletion. In reality, most ground-water discharge areas are associated with concentrations of poor-quality water and saline soils. Consequently, pumping generally should be located as strategically as possible within the constraints posed by water and soil conditions. Consumption of pumped ground water may eventually have to be limited to the amount of discharge that economically can be captured (the perennial yield). Temporary higher withdrawals are possible hydrologically but may result in legal problems. Regulation of pumpage is at the discretion of the appropriate State Engineer.

Hualapai Flat, Nev., is an area where this option has been employed. The area is a small topographically closed basin on the northwest flank of the Black Rock Desert. Perennial yield is about 6,700 acre-feet (8.3 hm³) per year, and each foot of dewatering of the valley-fill reservoir will provide about 3,500 acre-feet (4.3 hm³) of stored water. Intensive agricultural development began in about 1960 and by 1967 the gross annual pumpage was about 11,000 acre-feet (13.6 hm³) per year. However, only about two-thirds of the gross pumpage was consumed (7,400 acre-ft or 9.1 hm³ per year) the remainder was recirculated to the ground-water reservoir (Harrell, 1969, p. 41). Allowing for some errors in estimates, the consumption of pumped water was about equal to the perennial yield. At this same time, a decision was made by the Nevada State Engineer to restrict development, and no per-

is to pump ground water for additional irrigated acres have been issued for several years. Pumping was sited primarily with respect to land availability and soil and is concentrated at one end of the valley. Ultimately, some pumping may have to be relocated in order to capture all available natural discharge. Also, problems in salt balance may develop in the pumping areas. However, regulation of pumpage early in the course of the area's development has probably minimized future problems and insured a moderate-sized, viable agricultural development for many years.

UTILIZATION OF GROUND-WATER STORAGE

Stored ground water is a valuable component of the region's water resource. There are about 300 million acre-feet (370,000 hm³) of recoverable water stored in the upper 300 feet (30 m) of saturated valley deposits. This water may be withdrawn as part of a planned depletion, it may be utilized principally during periods of drought or peak demand, or it may be held in reserve for possible future use.

USE AS A TRANSITIONAL RESERVE

This method of utilizing stored ground water is based on the concept that prior to any development a ground-water reservoir is in a state of dynamic equilibrium, where average recharge to the system equals average discharge, and there is no long-term change in storage. Any pumping will create an imbalance where water is pumped from storage until water levels decline sufficiently to cause natural discharge to decrease or recharge to increase and return the system to a new equilibrium where recharge equals natural discharge (if any) plus pumpage. In most desert valleys, there are no appreciable areas where recharge can be increased by pumping. If wells are strategically located in and near areas of natural discharge, the water that must be removed from storage before a new equilibrium can be obtained will be minimal. The minimal quantity of water that must be pumped from storage before an arid ground-water basin can attain a new equilibrium when developed at a rate equal to the perennial yield has been called the transitional storage reserve (Worts, 1967, p. 50). This quantity is a property of the ground-water basin and may be useful in long-term planning.

Diamond Valley, Nev., is an area where some planned storage depletion may be an option for the future. The valley is about 50 miles (80 km) long and averages about 12 miles (19 km) wide. All natural discharge is in the north half of the valley. Perennial yield is about 30,000 acre-feet (37 hm³) per year, and each foot of dewatering of the valley-fill reservoir will produce about 28,000 acre-feet (35 hm³) of stored water. Transitional storage reserve is about 1,400,000 acre-feet (1,730 hm³). The area has been developed for agricultural use. Permits to pump ground

water were issued for large tracts of land at the south end of the valley. In 1969 about 23,000 acre-feet (28 hm³) of water was pumped from this part of the valley. Future increases are anticipated because of increased demand for hay and grain and because of the recent availability of electric power in the area. Most of the pumping is at least 10 miles (16 km) south of the area of natural discharge and a local overdraft is probable before all natural discharge is captured by pumping from the present area of development.

One alternative in regulating storage depletion in the south end of the valley would be to allow a depletion equal to the transitional storage reserve to occur and then redistribute pumping with more regard to the natural system. If net pumpage (consumption) were held to 30,000 acre-feet (37 hm³) per year, the time required to deplete the storage can be approximated by the following formula (Worts, 1967, p. 52):

$$\text{Net annual pumping rate} = \frac{\text{Transitional storage reserve}}{\text{Time, in years}} + \frac{\text{Perennial yield}}{2}$$

For the Diamond Valley area, time equals about 93 years. Thus, water could be depleted from the south end of the valley at a rate of 30,000 acre-feet (37 hm³) per year for almost 100 years before the transitional storage reserve would be depleted. At that time it might be desirable to redistribute pumping as the average decline of non-pumping water levels in the south half of the valley would be about 100 feet (30 m); greater declines would be expected near centers of pumping. When a new equilibrium is finally attained, the total depletion of storage would only be slightly more than if the original pumping had been in or near the discharge areas. If desired, this same volume of storage could be depleted by pumping at a higher rate for a shorter period of time. After significant depletion has occurred, analytical models could be used to refine the initial estimates of time and to evaluate the optimum distribution of pumpage.

USE TO SUPPLY A TIME-LIMITED DEVELOPMENT

Ground water may be withdrawn at a rate greater than the perennial yield of the ground-water system for a limited period of time. This results in depletion of storage; however, it is not uncommon for an amount equal to several hundred times the perennial yield of the ground-water system to be stored at economically recoverable depths. Thus, in many areas, appreciable amounts of water might be removed from storage before seriously adverse economic effects occur. Ultimately, however, withdrawals would have to be limited to the approximate perennial yield of the ground-water system under the State laws or policies. Time-limited developments could be either (1) semipermanent developments, which could be economically terminated or reduced at the end of a given period of time, or (2) permanent developments,



STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

DEE C. HANSEN
STATE ENGINEER
EARL M. STAKER
DEPUTY

P.O. BOX 506
CEDAR CITY, UTAH 84720
586 4231

GERALD W. STOKER
AREA ENGINEER

March 21, 1980

Desert Research Institute
University of Nevada System
P. O. Box 60220
Reno, Nevada 89506

Attention: Donald Clark PE

RE: MX System, Utah

Dear Mr. Clark;

A change in my schedule allowed a brief research of the matter we discussed earlier and as related to your recent letter. We will address those areas of concern and hopefully answer your questions.

The green numbers on the enclosed map are the code numbers used by the Division of Water Rights in defining the hydrologic basins or subbasins as we know them. The policy for each basin will be briefly discussed on the attached summary sheet. We note that, generally, the USGS system agrees with our system for defining the basins although their numbers are different.

Apparently you have in your possession copies of the technical publications that I had in mind when we conversed earlier. Tech. Pub. 51 and 56 are the ones I had referred to but I will make another search through the library for others that might be pertinent.

The five areas that you refer to are going to be difficult to describe with any sense of accuracy:

1. Estimated annual surface water runoff - we have nothing in our files that would assist in this area.
2. Estimated annual natural groundwater recharge - The precipitation records from weather stations operated by various government agencies could give you a rough estimate of the potential recharge to the groundwater reservoir.

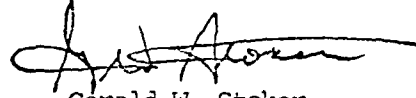
Page 2

RE: MX System, Utah

3. Estimated annual natural groundwater discharge - again, we have no record of the discharge from wells over the major portion of the area in question. Exceptions will be noted in the summary.
4. Estimated perennial groundwater yield and 5. Estimated transitional storage reserve also fall into the category of no information available at this time.

The summary is attached and should contain information that will answer some of the questions posed. Feel free to contact our office later for clarification to new or old questions.

Yours truly,



Gerald W. Stoker
Area Engineer

GWS/bl
attachment

Copy Sent to: Rex Larsen
Salt Lake Office

- AREA 16 Skull Valley (aka Fish Spring Flat, Dugway Valley)
Open to appropriation of water.
Existing development is scattered throughout the area and involves several separate groundwater basins. The depth to water and the quality also vary throughout the basins.
- AREA 18 White Sage Valley (aka Pine Valley)
Open to appropriation of water.
Existing development is located near the south central of the basin and is still in the testing category. The depth to water is approximately 500 feet and the quality of the water is unknown. There are a few stockwatering wells scattered throughout the valley.
- AREA 19 Hamblin Valley (aka Tule Valley, Snake Valley)
Open to appropriation of water, although the State Engineer is presently holding large applications in the south end of the basin. The groundwater table is approximately 200 to 300 feet deep and the water quality is generally good.
- AREA 68 Sevier Desert, Sevier Lake
The area is generally open to appropriation of water, however, near the Delta area there are restrictions to the aquifers that can be developed. Since there are a number of separate and distinct aquifers the depth to water and the quality of water differ depending on the location.
- AREA 69 Wah Wah Valley
Open to appropriation of water.
Existing development under the alunit project in the southern portion of the valley. The groundwater table is approximately 600 feet deep and the water quality varies. Tech. Pub. 47 covers this valley in good detail.
- AREA 71 Escalante Valley, includes Milford Valley, Lund Area, & Beryl-Enterprise Area (aka Escalante Desert)
Closed to appropriation of water.
Heavily developed in the Beryl-Enterprise and Milford Areas and these basins have experienced declining groundwater tables. The USGS has also recorded subsidence in both areas and much of the detail is found in Tech. Pubs. 13 and 43.
All future development must be accomplished through the transfer of existing water rights.
- AREA 73 Cedar City Valley (Escalante Desert)
Area 75 Parowan Valley (Escalante Desert)
Area 77 Beaver Valley (Escalante Desert)
Closed to appropriation of water.
Same policy as Area 71 except the subsidence problem.

PUBLICATIONS OF THE UTAH DEPARTMENT OF NATURAL RESOURCES,
DIVISION OF WATER RIGHTS

(*)-Out of Print

TECHNICAL PUBLICATIONS

- *No. 1. Underground leakage from artesian wells in the Flowell area, near Fillmore, Utah, by Penn Livingston and G. B. Maxey, U.S. Geological Survey, 1944.
- No. 2. The Ogden Valley artesian reservoir, Weber County, Utah, by H. E. Thomas, U.S. Geological Survey, 1945.
- *No. 3. Ground water in Pavant Valley, Millard County, Utah, by P. E. Dennis, G. B. Maxey and H. E. Thomas, U.S. Geological Survey, 1946.
- *No. 4. Ground water in Tooele Valley, Tooele County, Utah, by H. E. Thomas, U.S. Geological Survey, in Utah State Eng. 25th Bienn. Rept., p. 91-238, pls. 1-6, 1946.
- *No. 5. Ground water in the East Shore area, Utah: Part I, Bountiful District, Davis County, Utah, by H. E. Thomas and W. B. Nelson, U.S. Geological Survey, in Utah State Eng. 26th Bienn. Rept., p. 53-206, pls. 1-2, 1948.
- *No. 6. Ground water in the Escalante Valley, Beaver, Iron, and Washington Counties, Utah, by P. F. Fix, W. B. Nelson, B. E. Lofgren, and R. G. Butler, U.S. Geological Survey, in Utah State Eng. 27th Bienn. Rept., p. 107-210, pls. 1-10, 1950.
- No. 7. Status of development of selected ground-water basins in Utah, by H. E. Thomas, W. B. Nelson, B. E. Lofgren, and R. G. Butler, U.S. Geological Survey, 1952.
- *No. 8. Consumptive use of water and irrigation requirements of crops in Utah, by C. O. Roskelly and W. D. Criddle, 1952.
- No. 8. (Revised) Consumptive use and water requirements for Utah, by W. D. Criddle, Karl Harris, and L. S. Willardson, 1962.
- No. 9. Progress report on selected ground water basins in Utah, by H. A. Waite, W. B. Nelson, and others, U.S. Geological Survey, 1954.
- *No. 10. A compilation of chemical quality data for ground and surface waters in Utah, by J. G. Connor, C. G. Mitchell, and others, U.S. Geological Survey, 1958.
- *No. 11. Ground water in northern Utah Valley, Utah: A progress report for the period 1948-63, by R. M. Cordova and Seymour Subitzky, U.S. Geological Survey, 1965.

- *No. 12. Reevaluation of the ground-water resources of Tooele Valley, Utah, by J. S. Gates, U.S. Geological Survey, 1965.
- *No. 13. Ground-water resources of selected basins in southwestern Utah, by G. W. Sandberg, U.S. Geological Survey, 1966.
- *No. 14. Water-resources appraisal of the Snake Valley area, Utah and Nevada, by J. W. Hood and F. E. Rush, U.S. Geological Survey, 1966.
- *No. 15. Water from bedrock in the Colorado Plateau of Utah, by R. D. Feltis, U.S. Geological Survey, 1966.
- *No. 16. Ground-water conditions in Cedar Valley, Utah County, Utah, by R. D. Feltis, U.S. Geological Survey, 1967.
- *No. 17. Ground-water resources of northern Juab Valley, Utah, by L. J. Bjorklund, U.S. Geological Survey, 1968.
- No. 18. Hydrologic reconnaissance of Skull Valley, Tooele County, Utah, by J. W. Hood and K. M. Waddell, U.S. Geological Survey, 1968.
- No. 19. An appraisal of the quality of surface water in the Sevier Lake basin, Utah, by D. C. Hahl and J. C. Mundorff, U.S. Geological Survey, 1968.
- No. 20. Extensions of streamflow records in Utah, by J. K. Reid, L. E. Carroon, and G. E. Pyper, U.S. Geological Survey, 1969.
- No. 21. Summary of maximum discharges in Utah streams, by G. L. Whitaker, U.S. Geological Survey, 1969.
- No. 22. Reconnaissance of the ground-water resources of the upper Fremont River valley, Wayne County, Utah, by L. J. Bjorklund, U.S. Geological Survey, 1969.
- No. 23. Hydrologic reconnaissance of Rush Valley, Tooele County, Utah, by J. W. Hood, Don Price, and K. M. Waddell, U.S. Geological Survey, 1969.
- No. 24. Hydrologic reconnaissance of Deep Creek valley, Tooele and Juab Counties, Utah, and Elko and White Pine Counties, Nevada, by J. W. Hood and K. M. Waddell, U.S. Geological Survey, 1969.
- No. 25. Hydrologic reconnaissance of Curlew Valley, Utah and Idaho, by E. L. Bolke and Don Price, U.S. Geological Survey, 1969.
- No. 26. Hydrologic reconnaissance of the Sink Valley area, Tooele and Box Elder Counties, Utah, by Don Price and E. L. Bolke, U.S. Geological Survey, 1969.

- No. 27. Water resources of the Heber-Kamas-Park City area, north-central Utah, by C. H. Baker, Jr., U.S. Geological Survey, 1970.
- No. 28. Ground-water conditions in southern Utah Valley and Goshen Valley, Utah, by R. M. Cordova, U.S. Geological Survey, 1970.
- No. 29. Hydrologic reconnaissance of Grouse Creek valley, Box Elder County, Utah, by J. W. Hood and Don Price, U.S. Geological Survey, 1970.
- No. 30. Hydrologic reconnaissance of the Park Valley area, Box Elder County, Utah, by J. W. Hood, U.S. Geological Survey, 1971.
- No. 31. Water resources of Salt Lake County, Utah, by A. G. Hely, R. W. Mower, and C. A. Harr, U.S. Geological Survey, 1971.
- No. 32. Geology and water resources of the Spanish Valley area, Grand and San Juan Counties, Utah, by C. T. Sumsion, U.S. Geological Survey, 1971.
- No. 33. Hydrologic reconnaissance of Hansel Valley and northern Rozel Flat, Box Elder County, Utah, by J. W. Hood, U.S. Geological Survey, 1971.
- No. 34. Summary of water resources of Salt Lake County, Utah, by A. G. Hely, R. W. Mower, and C. A. Harr, U.S. Geological Survey, 1971.
- No. 35. Ground-water conditions in the East Shore area, Box Elder, Davis, and Weber Counties, Utah, 1960-69, by E. L. Bolke and K. M. Waddell, U.S. Geological Survey, 1972.
- No. 36. Ground-water resources of Cache Valley, Utah and Idaho, by L. J. Bjorklund and L. J. McGreevy, U.S. Geological Survey, 1971.
- No. 37. Hydrologic reconnaissance of the Blue Creek Valley area, Box Elder County, Utah, by E. L. Bolke and Don Price, U.S. Geological Survey, 1972.
- No. 38. Hydrologic reconnaissance of the Promontory Mountains area, Box Elder County, Utah, by J. W. Hood, U.S. Geological Survey, 1972.
- No. 39. Reconnaissance of chemical quality of surface water and fluvial sediment in the Price River Basin, Utah, by J. C. Mundorff, U.S. Geological Survey, 1972.
- No. 40. Ground-water conditions in the central Virgin River basin, Utah, by R. M. Cordova, G. W. Sandberg, and Wilson McConkie, U.S. Geological Survey, 1972.

- No. 41. Hydrologic reconnaissance of Pilot Valley, Utah and Nevada, by J. C. Stephens and J. W. Hood, U.S. Geological Survey, 1973.
- No. 42. Hydrologic reconnaissance of the northern Great Salt Lake Desert and summary hydrologic reconnaissance of northwestern Utah, by J. C. Stephens, U.S. Geological Survey, 1973.
- No. 43. Water resources of the Milford area, Utah, with emphasis on ground water, by R. W. Mower and R. M. Cordova, U.S. Geological Survey, 1974.
- No. 44. Ground-water resources of the lower Bear River drainage basin, Box Elder County, Utah, by L. J. Bjorklund and L. J. McGreevy, U.S. Geological Survey, 1974.
- No. 45. Water resources of the Curlew Valley drainage basin, Utah and Idaho, by C. H. Baker, Jr., U.S. Geological Survey, 1974.
- No. 46. Water-quality reconnaissance of surface inflow to Utah Lake, by J. C. Mundorff, U.S. Geological Survey, 1974.
- No. 47. Hydrologic reconnaissance of the Wah Wah Valley drainage basin, Millard and Beaver Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1974.
- No. 48. Estimating mean streamflow in the Duchesne River Basin, Utah, by R. W. Cruff, U.S. Geological Survey, 1974.
- No. 49. Hydrologic reconnaissance of the southern Uinta Basin, Utah and Colorado, by Don Price and L. L. Miller, U.S. Geological Survey, 1975.
- No. 50. Seepage study of the Rocky Point Canal and the Grey Mountain-Pleasant Valley Canal systems, Duchesne County, Utah, by R. W. Cruff and J. W. Hood, U.S. Geological Survey, 1975.
- No. 51. Hydrologic reconnaissance of the Pine Valley drainage basin, Millard, Beaver, and Iron Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1976.
- No. 52. Seepage study of canals in Beaver Valley, Beaver County, Utah, by R. W. Cruff and R. W. Mower, U.S. Geological Survey, 1976.
- No. 53. Characteristics of aquifers in the northern Uinta Basin area, Utah and Colorado, by J. W. Hood, U.S. Geological Survey, 1976.
- No. 54. Hydrologic evaluation of Ashley Valley, northern Uinta Basin area, Utah, by J. W. Hood, U.S. Geological Survey, 1977.

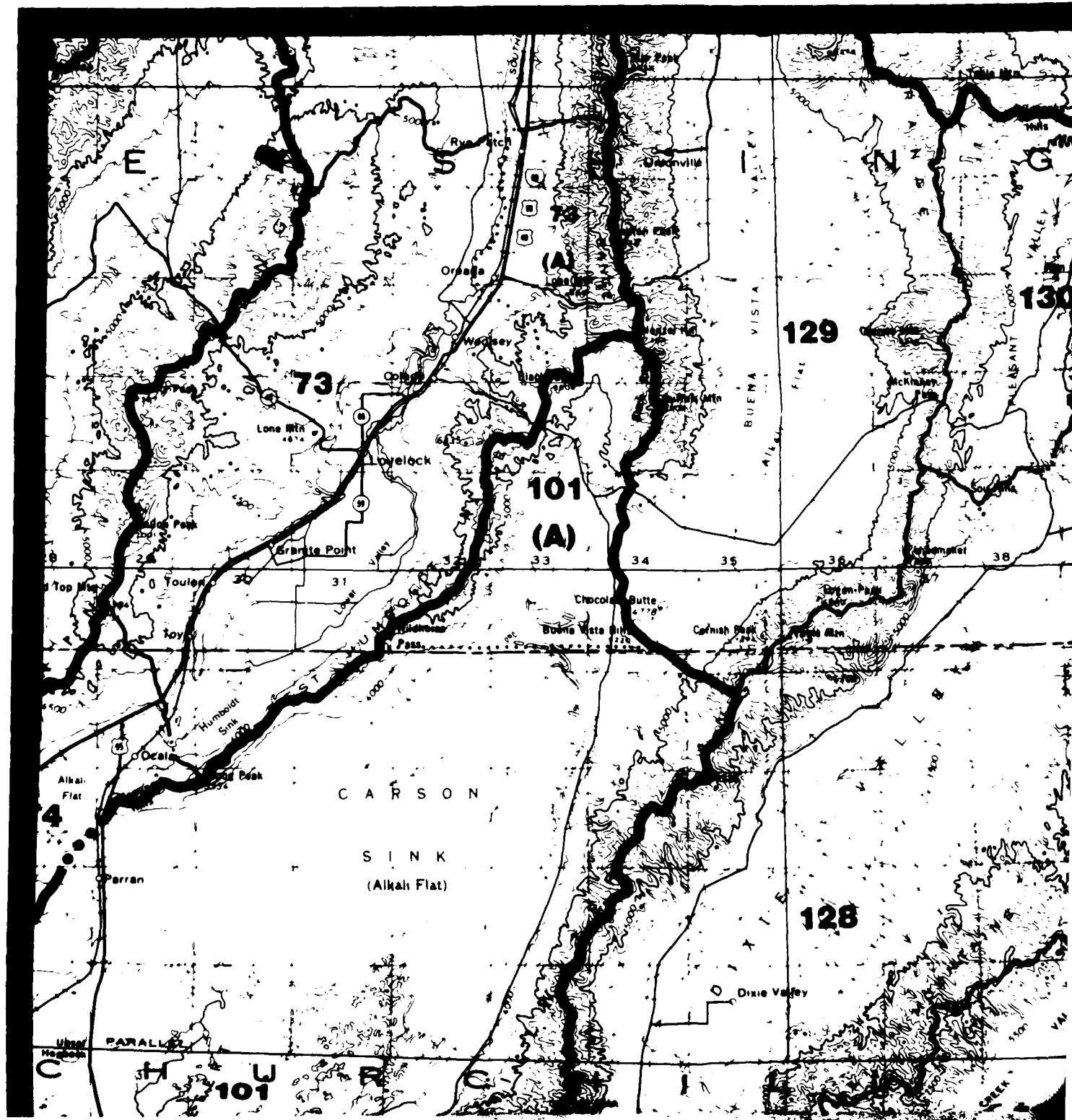
- No. 55. Reconnaissance of water quality in the Duchesne River basin and some adjacent drainage areas, Utah, by J. C. Mundorff, U.S. Geological Survey, 1977.
- No. 56. Hydrologic reconnaissance of the Tule Valley drainage basin, Juab and Millard Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1977.
- No. 57. Hydrologic evaluation of the upper Duchesne River valley, northern Uinta Basin area, Utah, by J. W. Hood, U.S. Geological Survey, 1977.
- No. 58. Seepage study of the Sevier Valley-Piute Canal, Sevier County, Utah, by R. W. Cruff, U.S. Geological Survey, 1977.
- No. 59. Hydrologic reconnaissance of the Dugway Valley-Government Creek area, west-central Utah, by J. C. Stephens and C. T. Sumsion, U.S. Geological Survey, 1978.

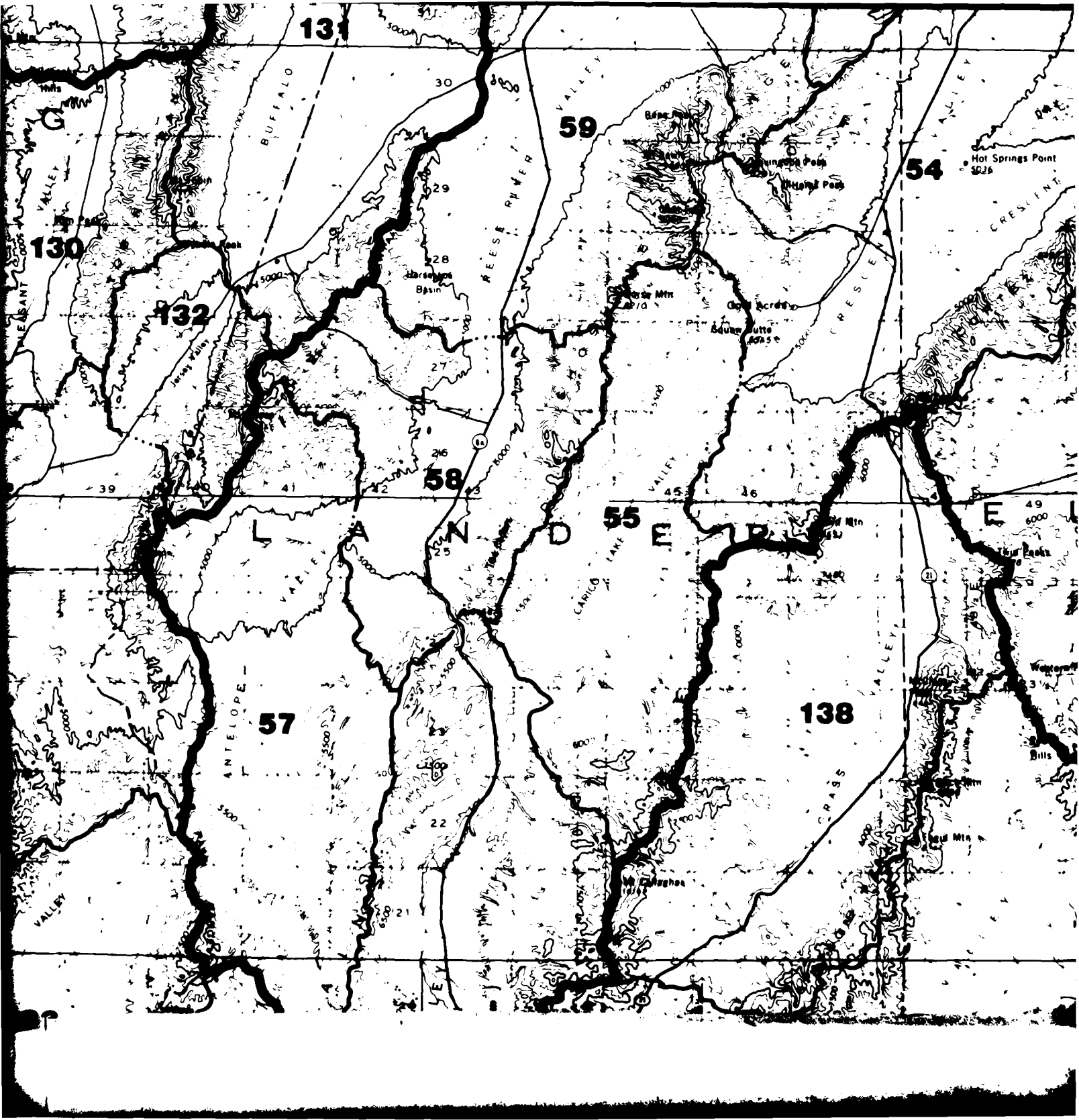
WATER CIRCULARS

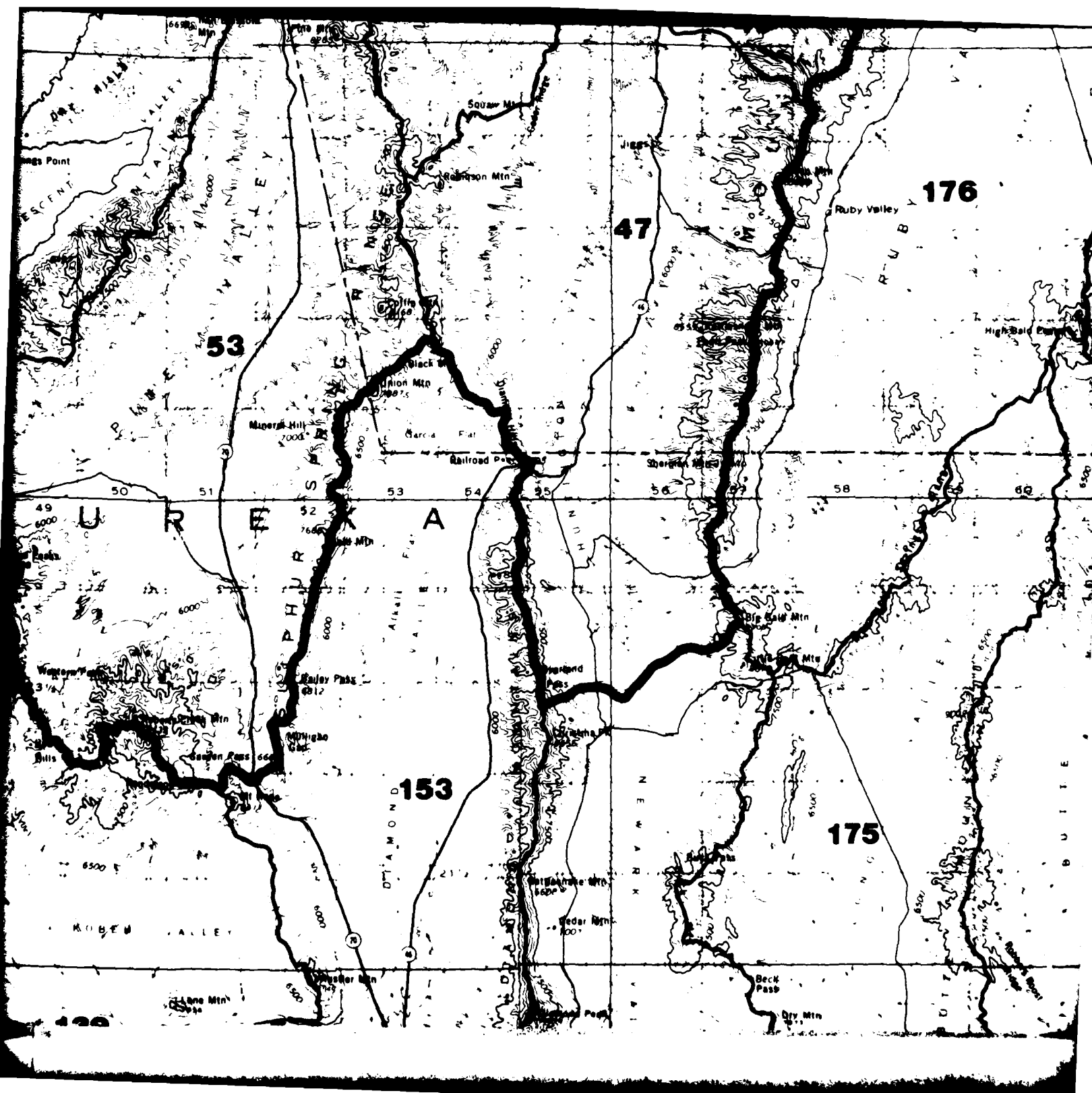
- No. 1. Ground water in the Jordan Valley, Salt Lake County, Utah, by Ted Arnow, U.S. Geological Survey, 1965.
- No. 2. Ground water in Tooele Valley, Utah, by J. S. Gates and O. A. Keller, U.S. Geological Survey, 1970.

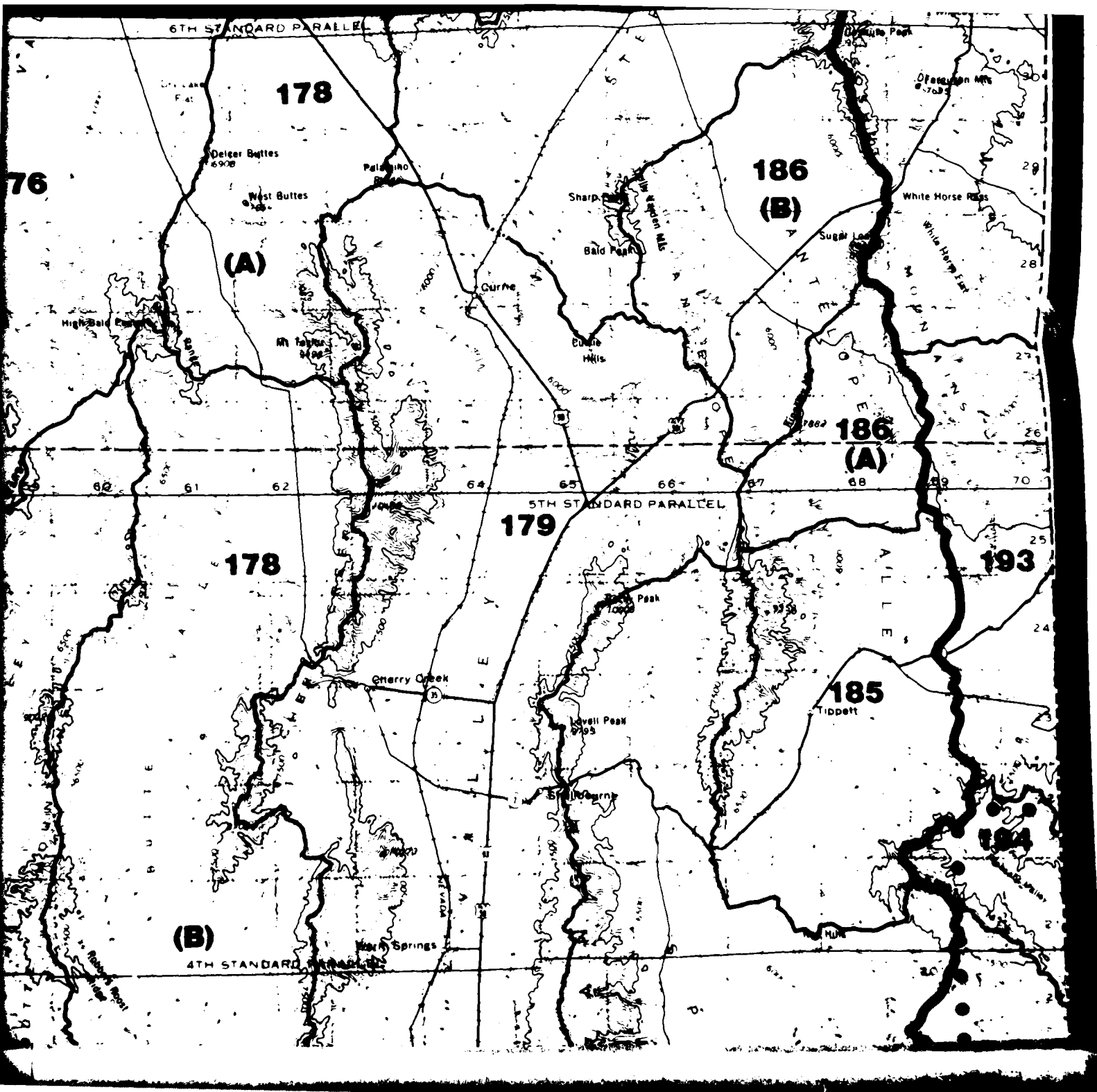
BASIC-DATA REPORTS

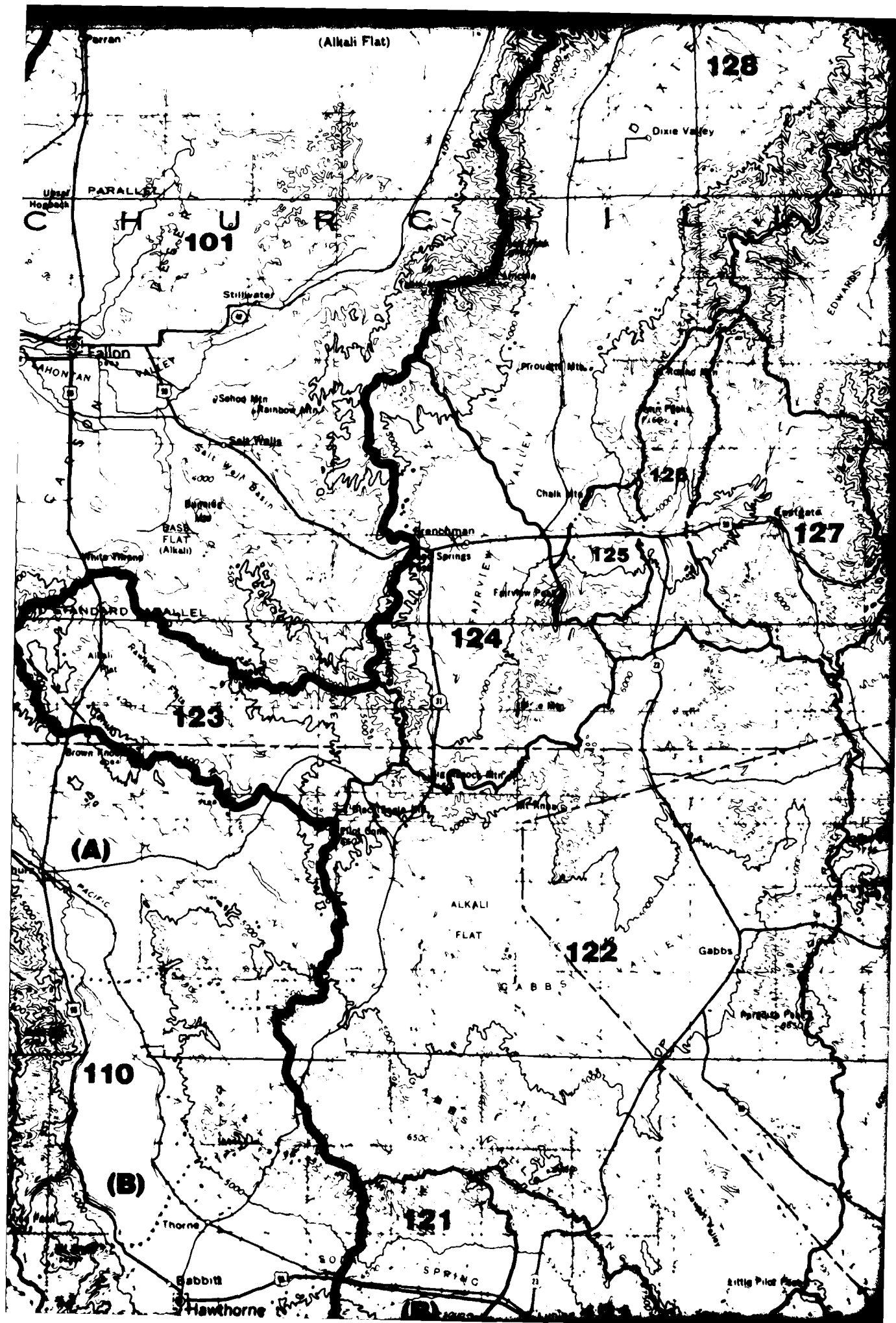
- *No. 1. Records and water-level measurements of selected wells and chemical analyses of ground water, East Shore area, Davis, Weber, and Box Elder Counties, Utah, by R. E. Smith, U.S. Geological Survey, 1961.
- No. 2. Records of selected wells and springs, selected drillers' logs of wells, and chemical analyses of ground and surface waters, northern Utah Valley, Utah County, Utah, by Seymour Subitzky, U.S. Geological Survey, 1962.
- No. 3. Ground-water data, central Sevier Valley, parts of Sanpete, Sevier, and Piute Counties, Utah, by C. H. Carpenter and R. A. Young, U.S. Geological Survey, 1963.
- *No. 4. Selected hydrologic data, Jordan Valley, Salt Lake County, Utah, by I. W. Marine and Don Price, U.S. Geological Survey, 1963.
- *No. 5. Selected hydrologic data, Pavant Valley, Millard County, Utah, by R. W. Mower, U.S. Geological Survey, 1963.
- *No. 6. Ground-water data, parts of Washington, Iron, Beaver, and Millard Counties, Utah, by G. W. Sandberg, U.S. Geological Survey, 1963.

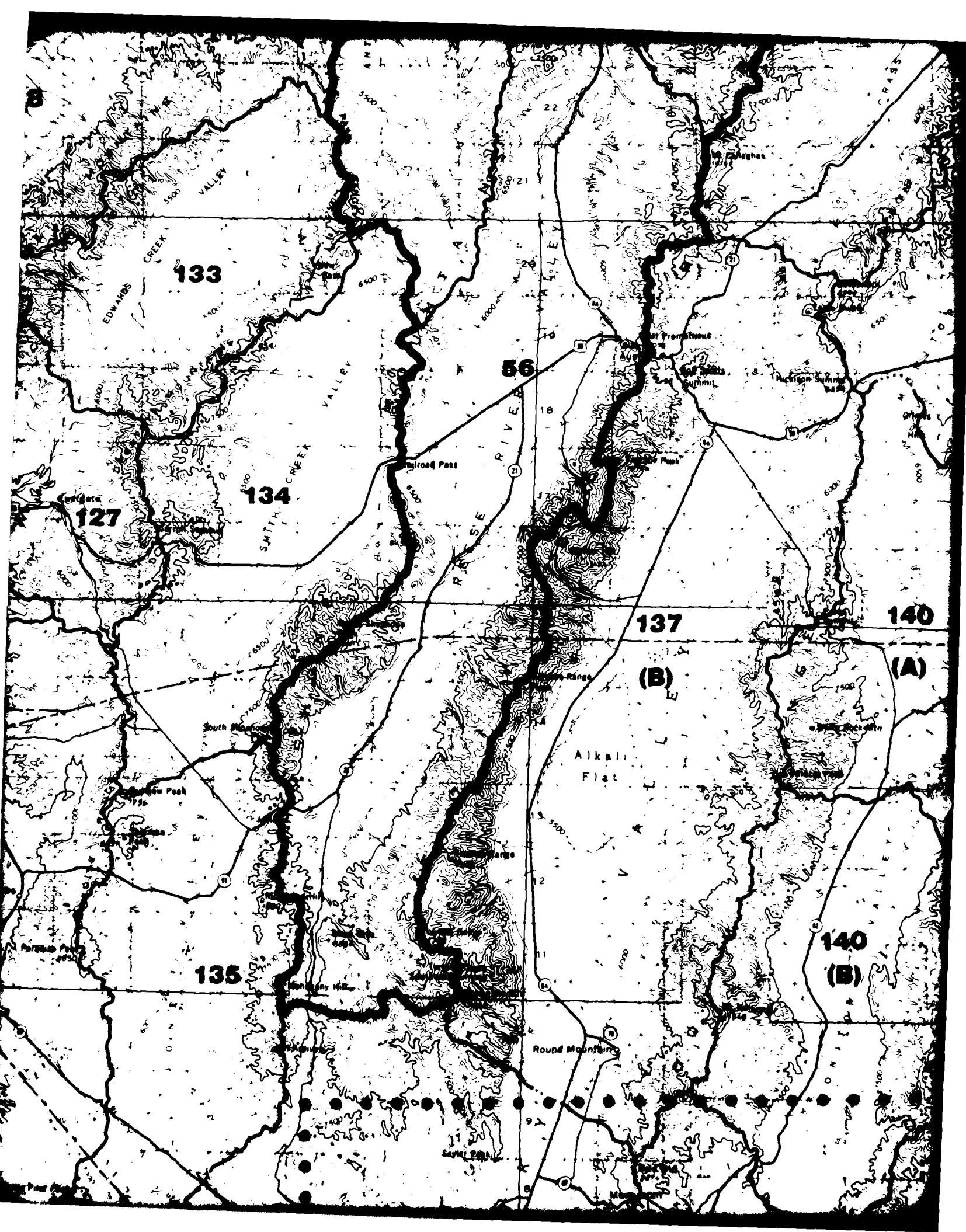


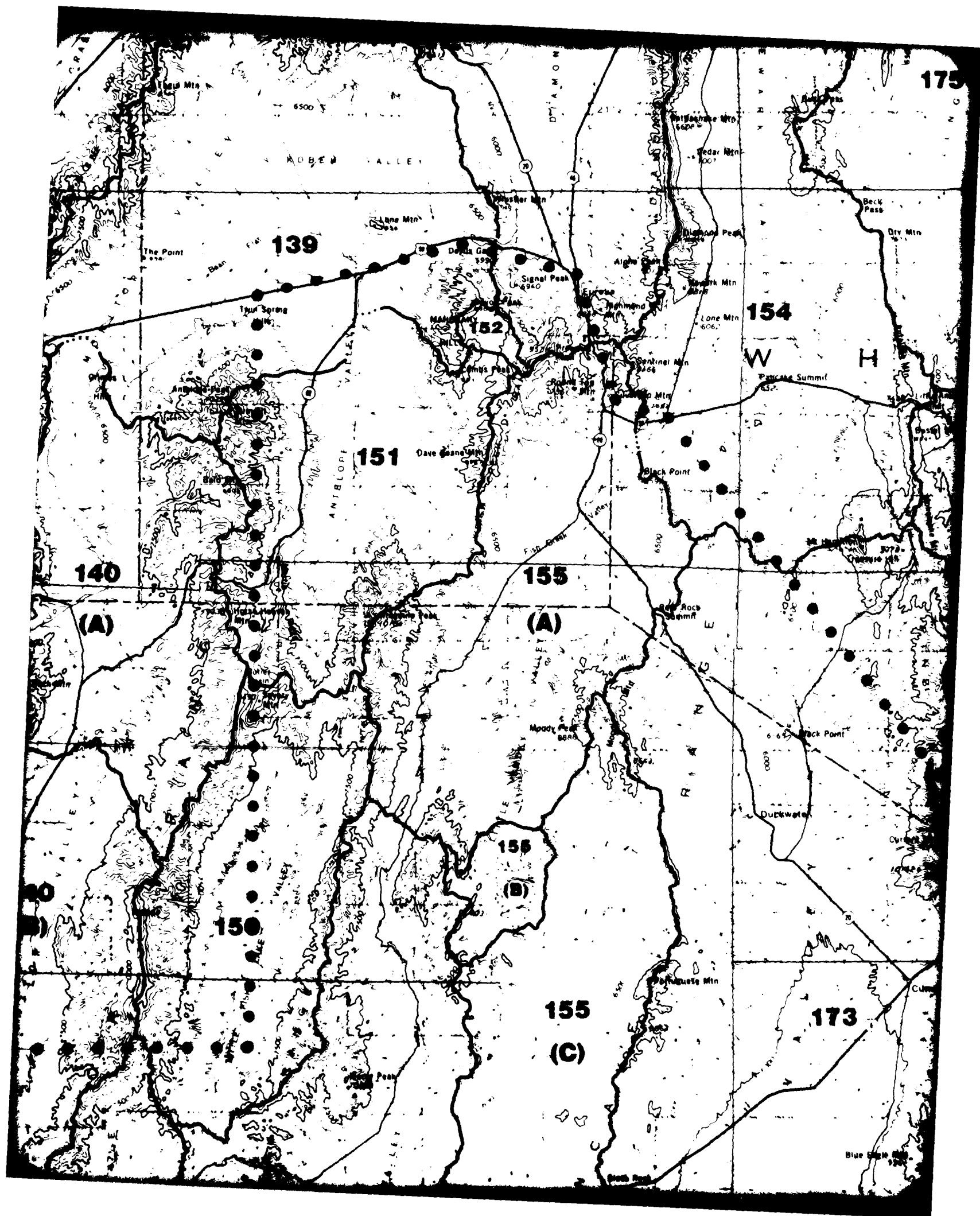


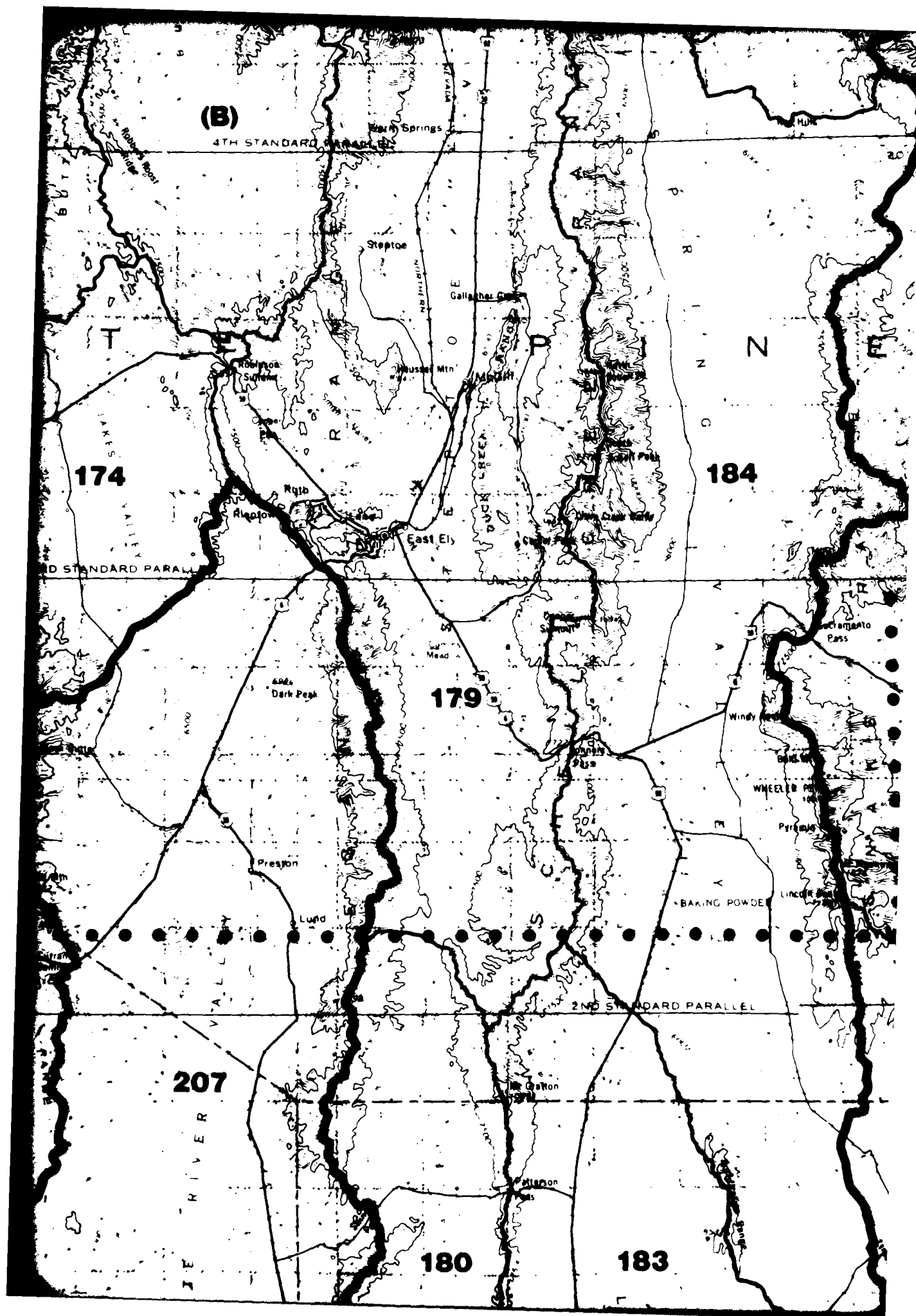


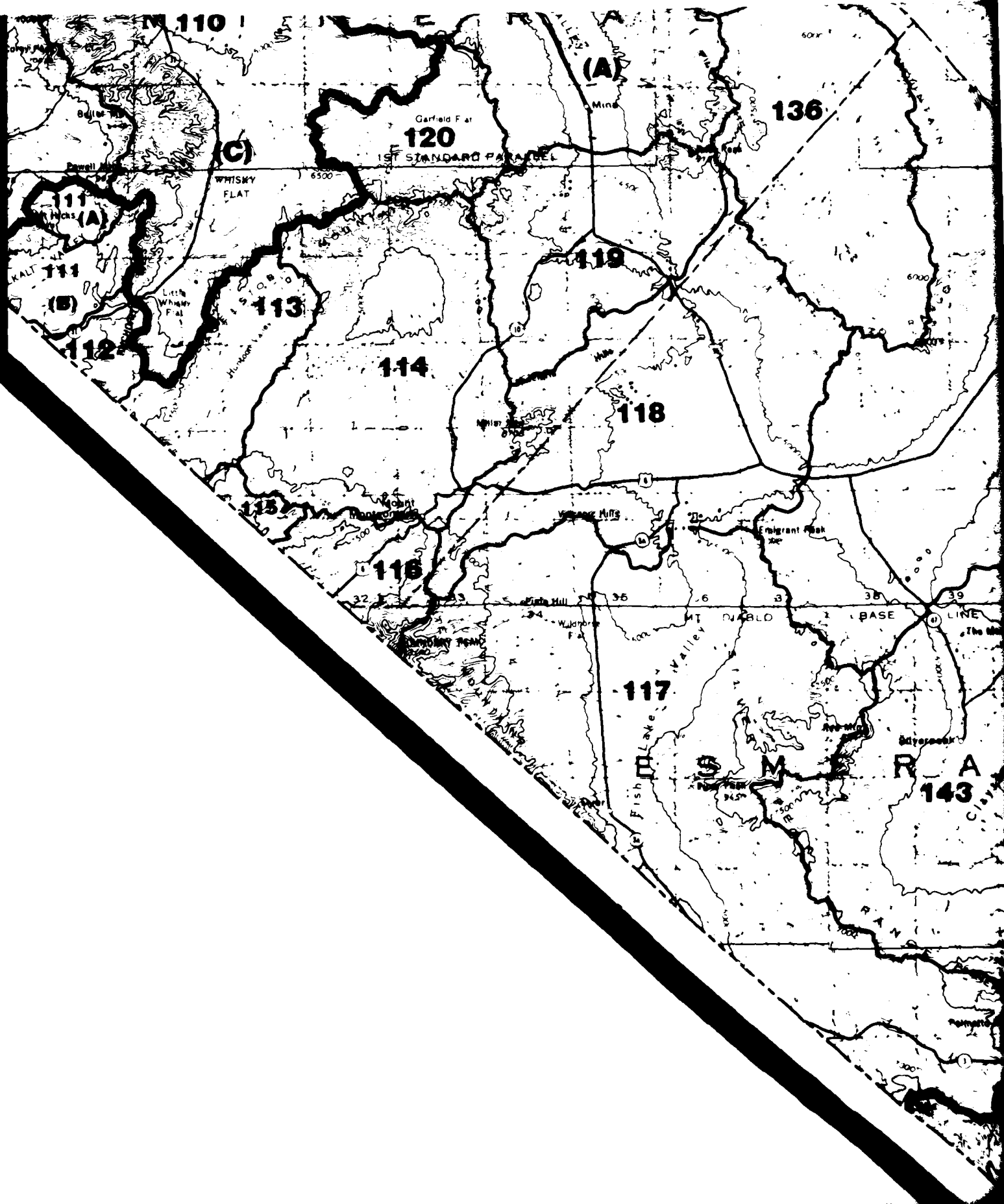


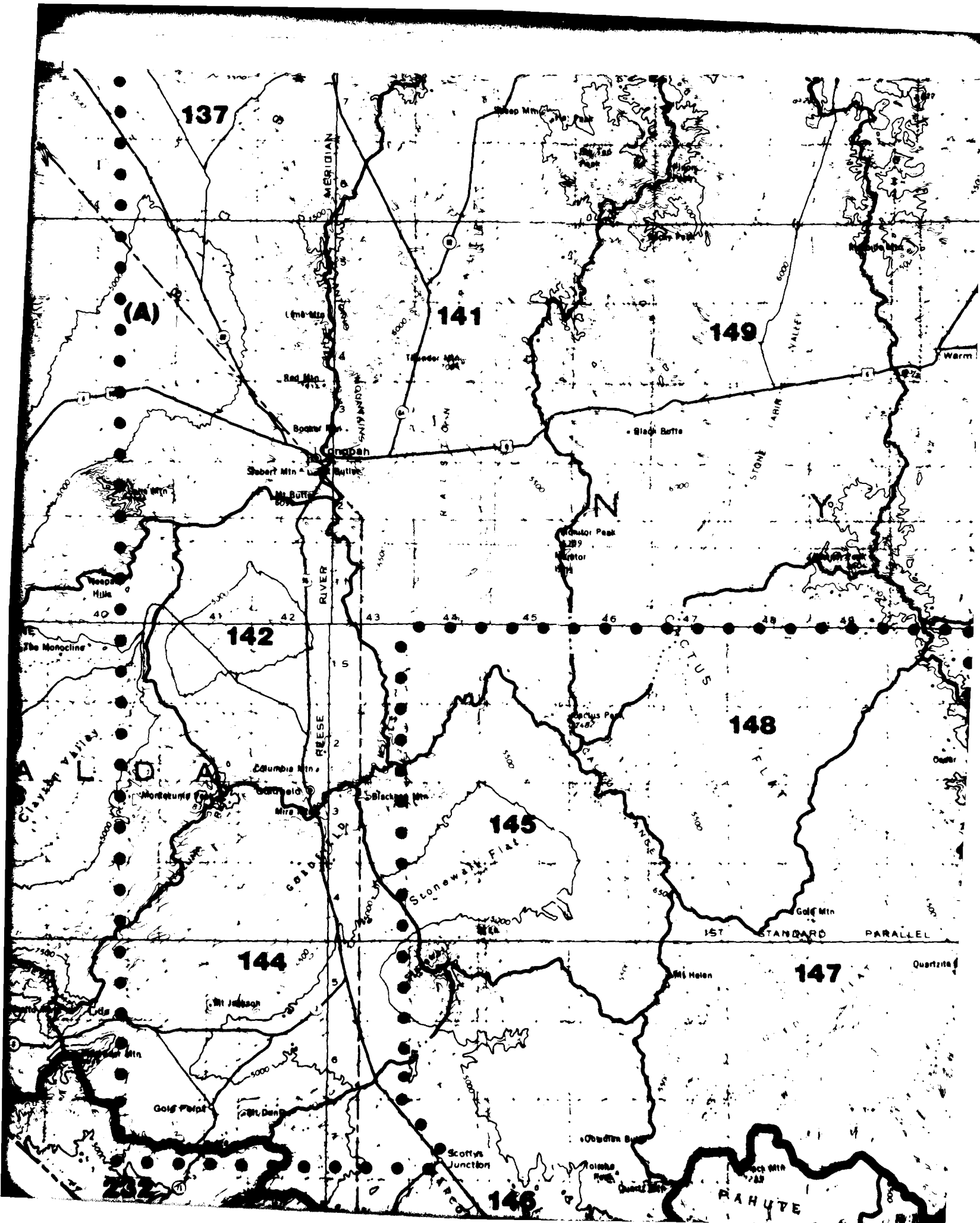


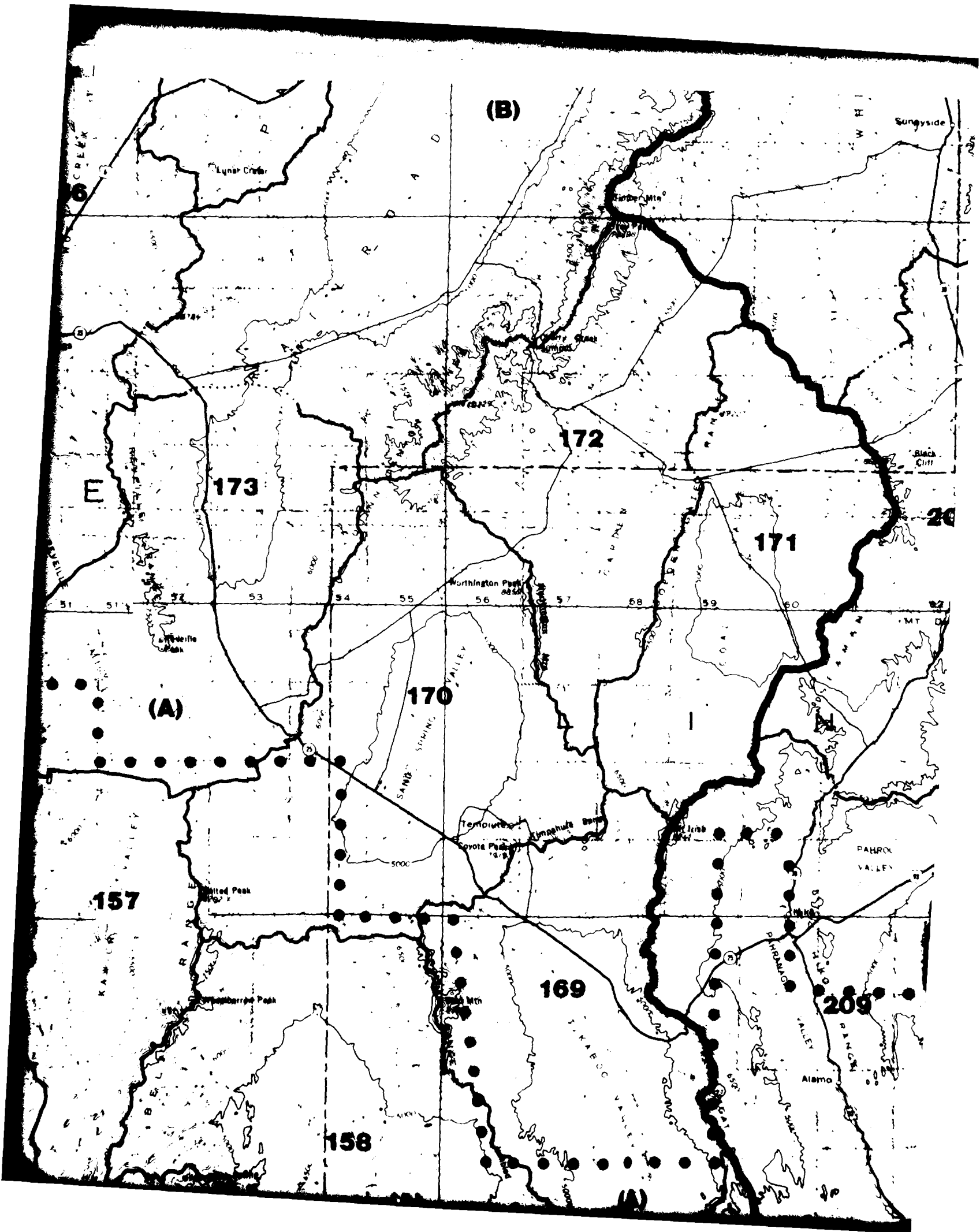


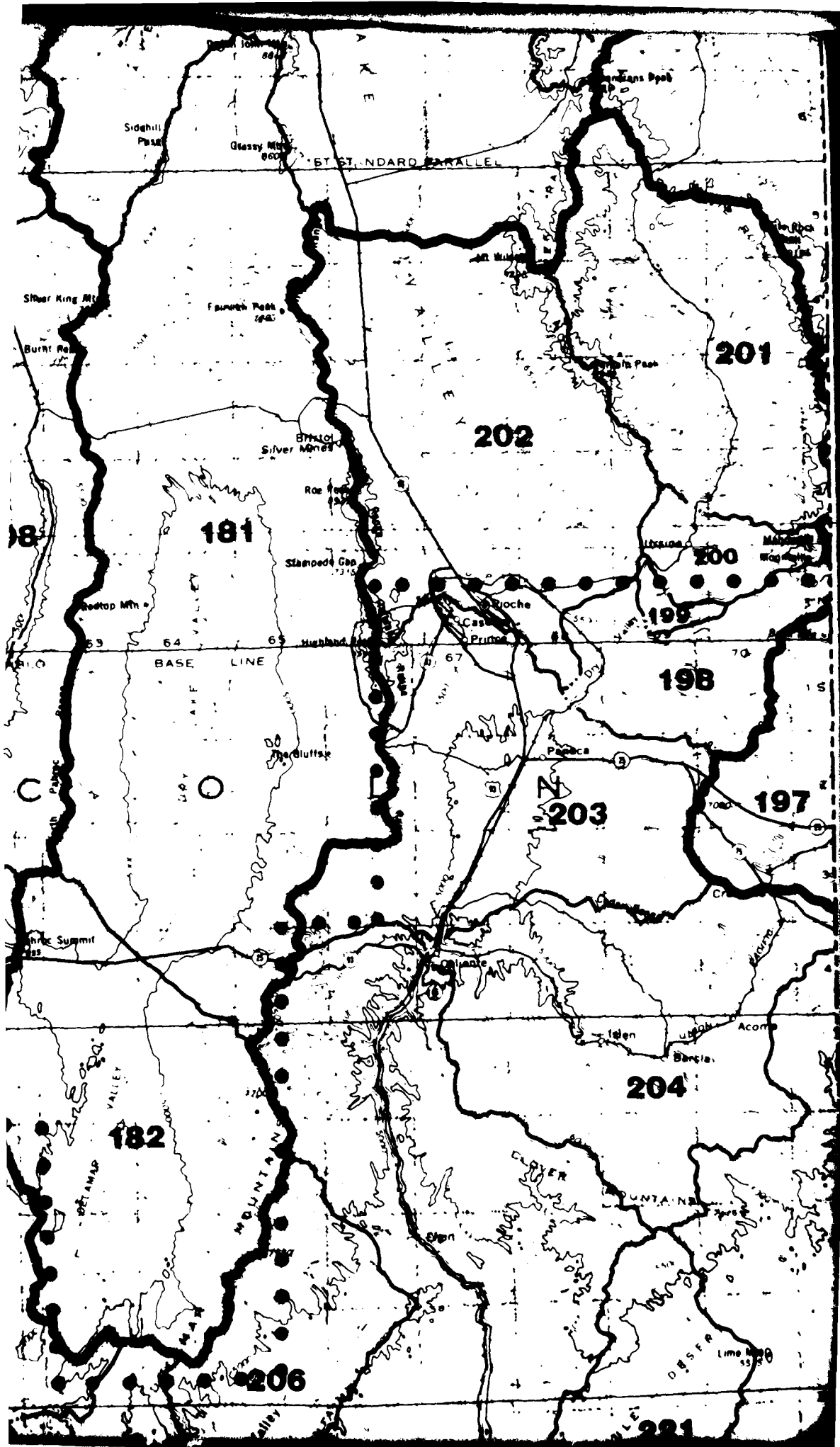


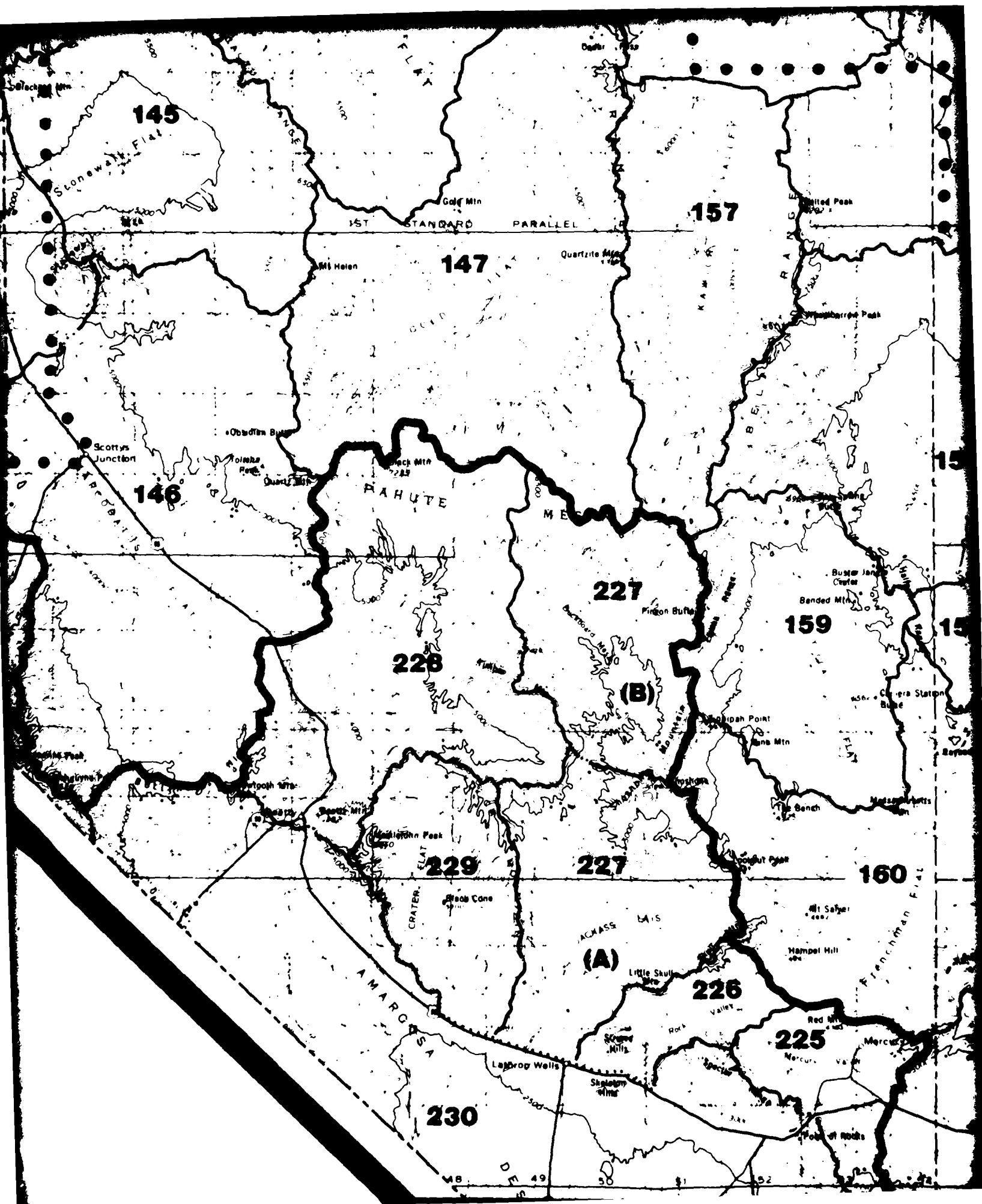


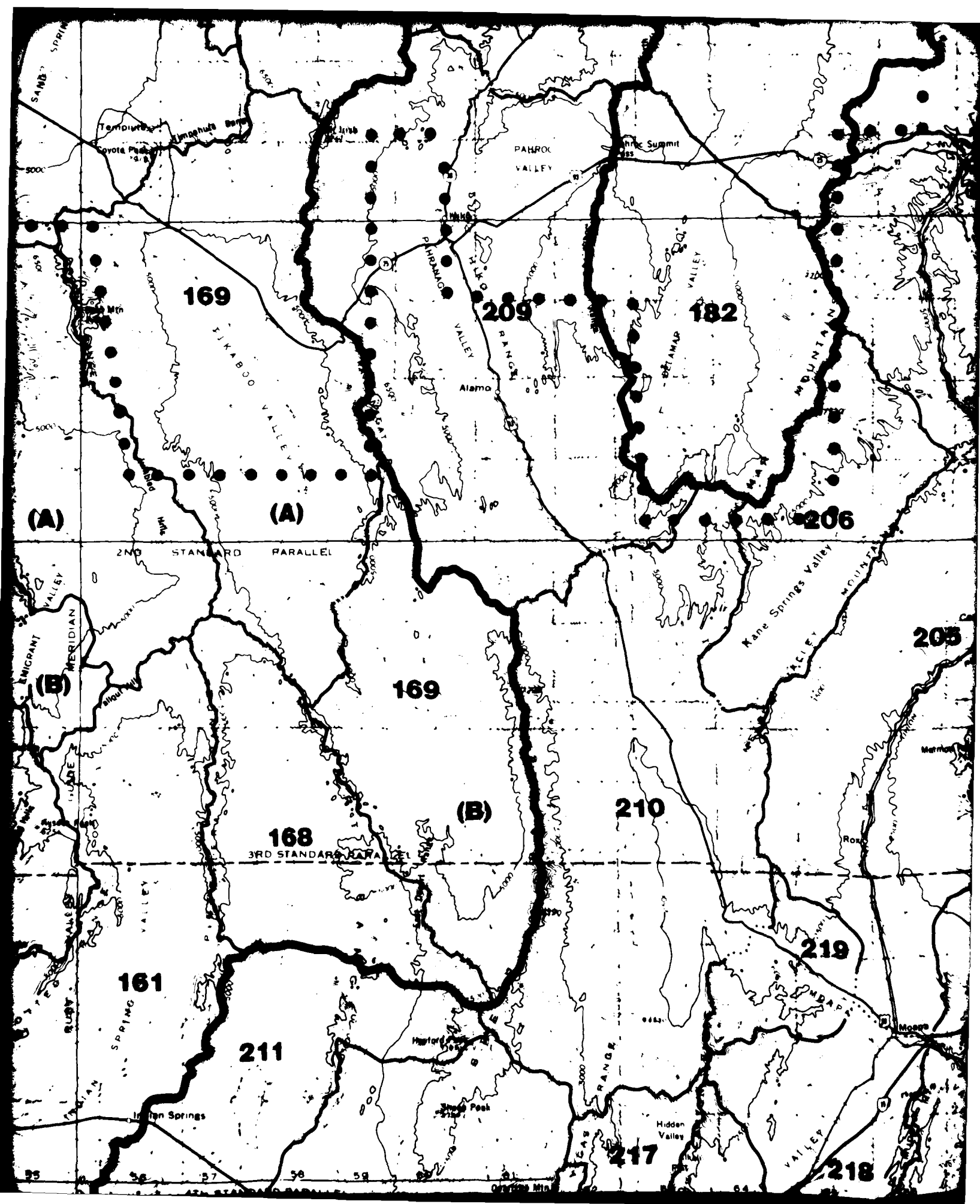


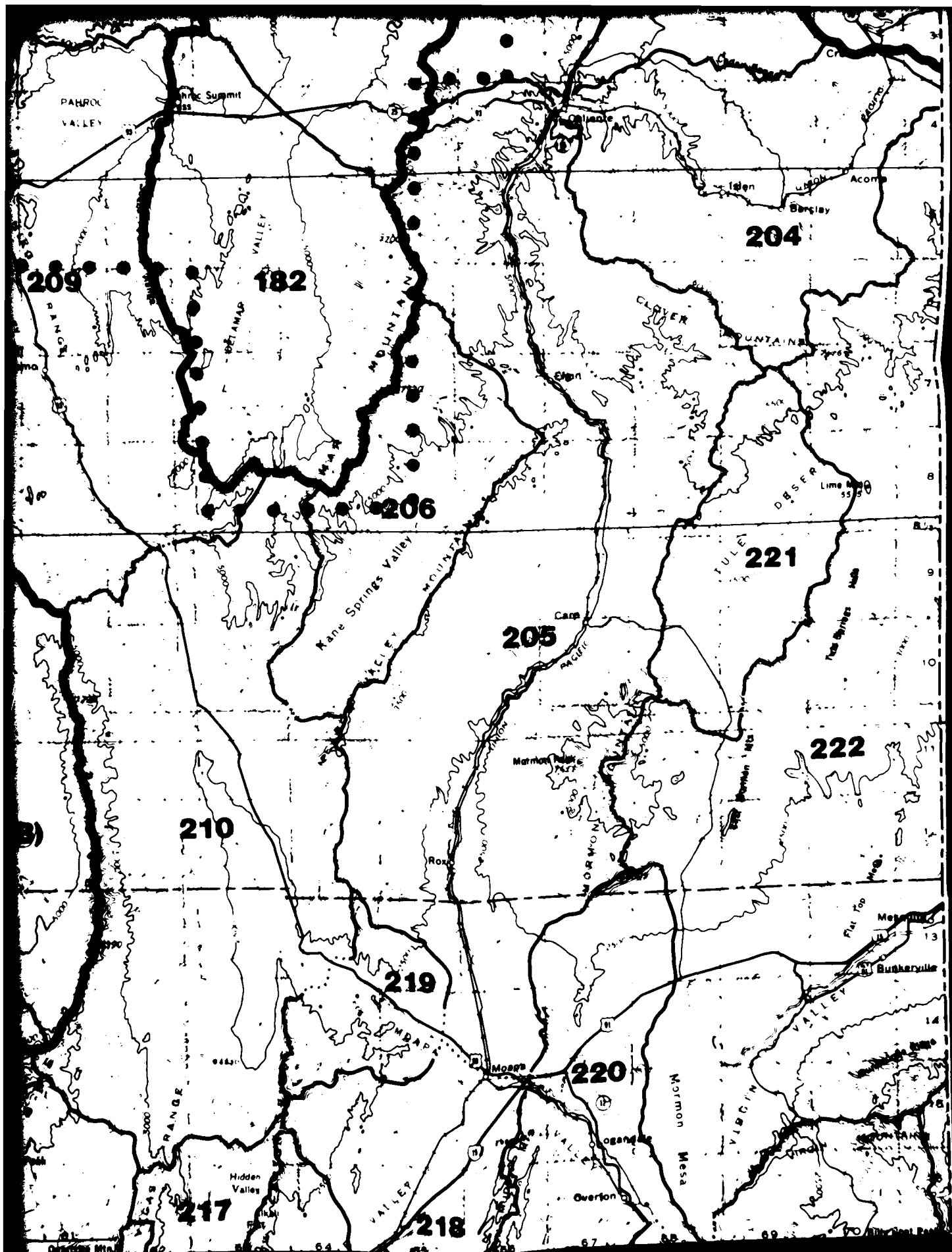


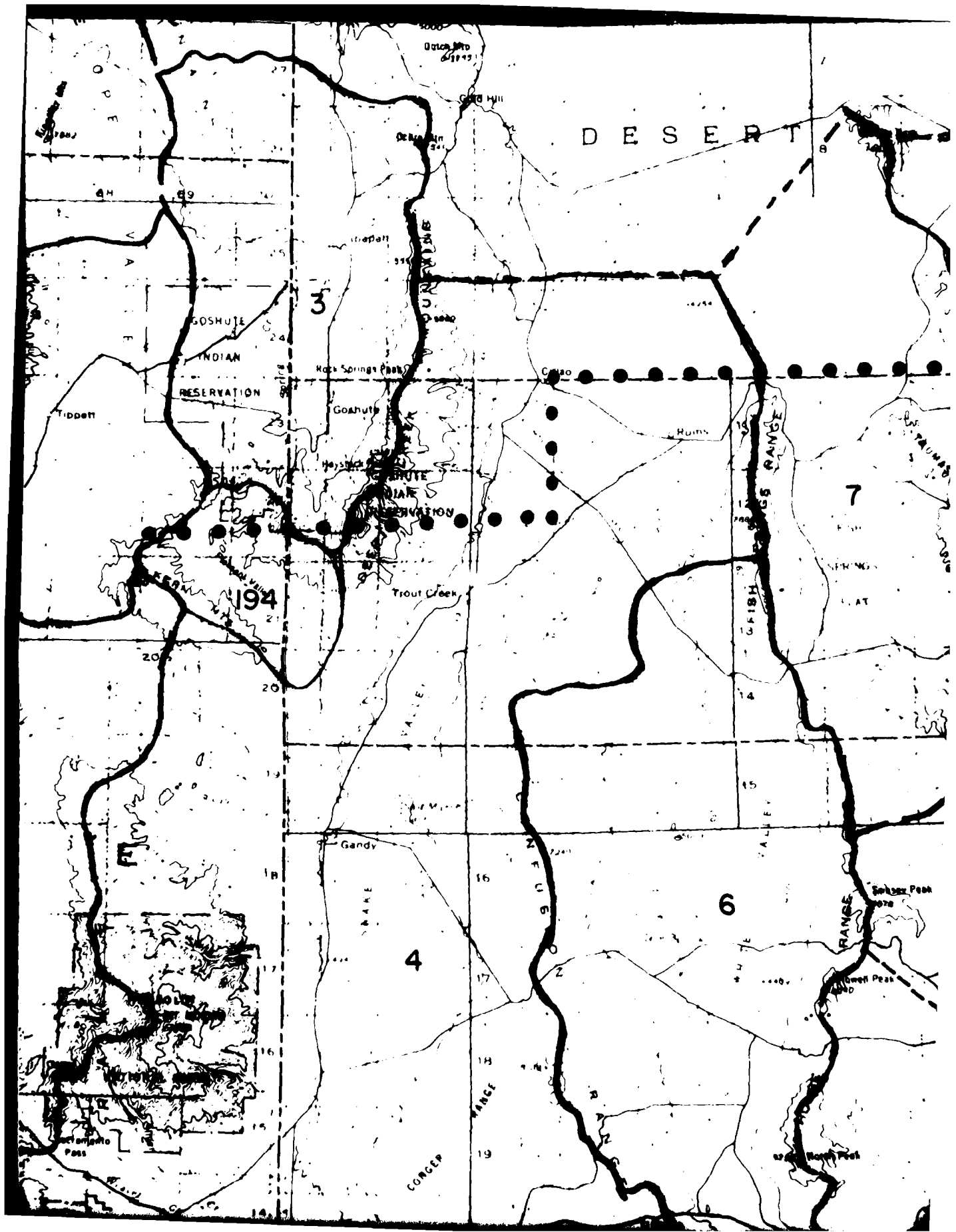


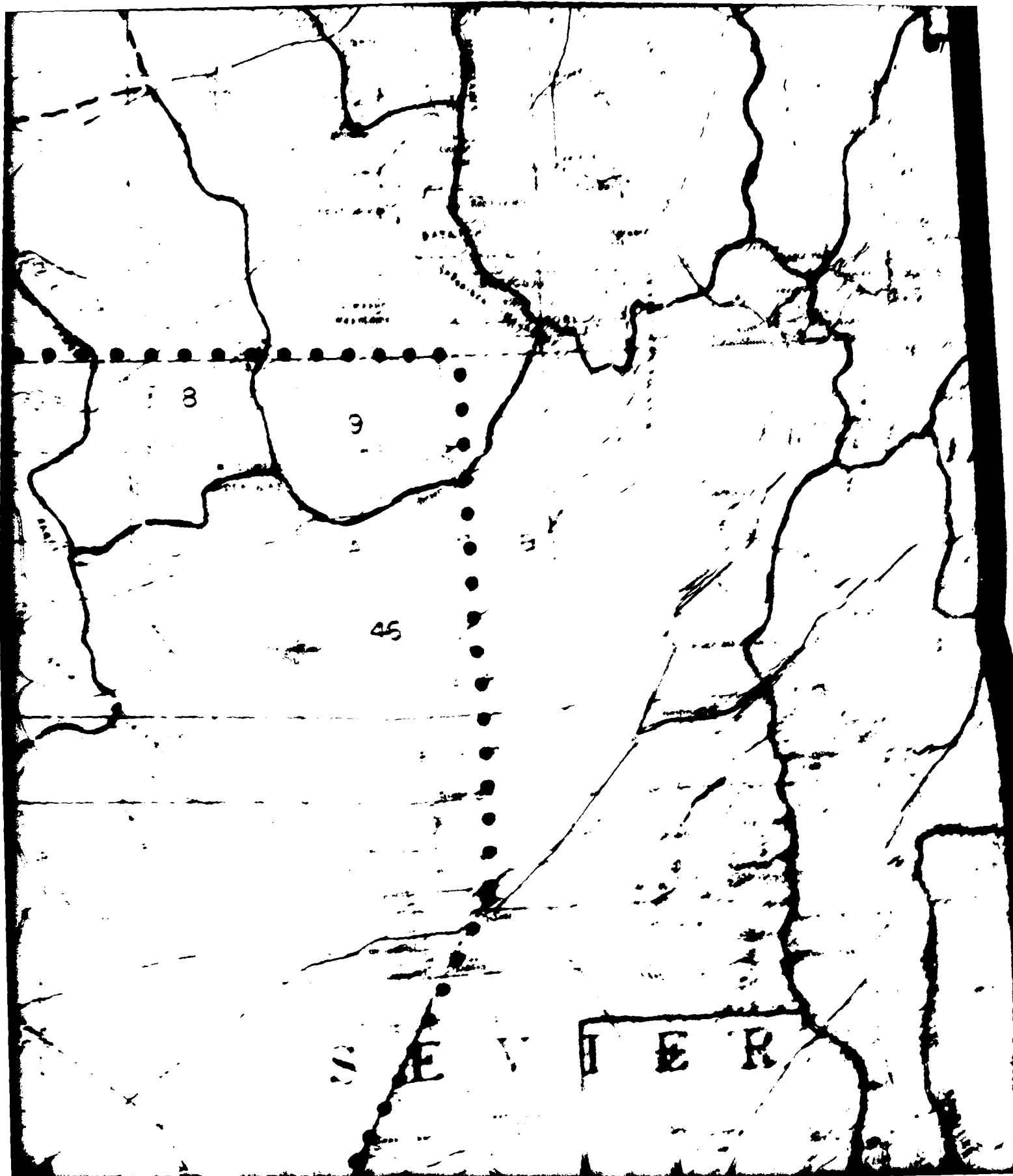


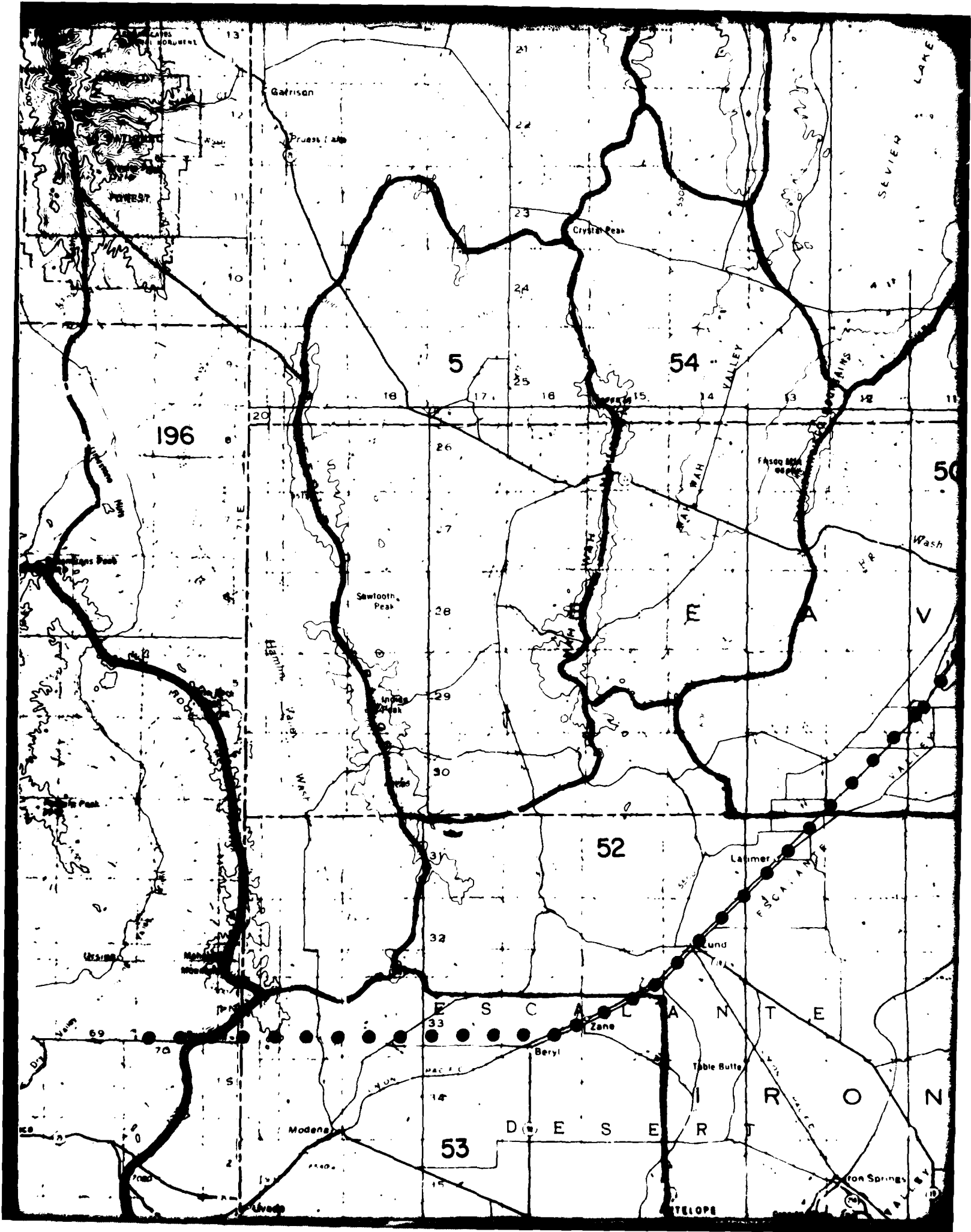












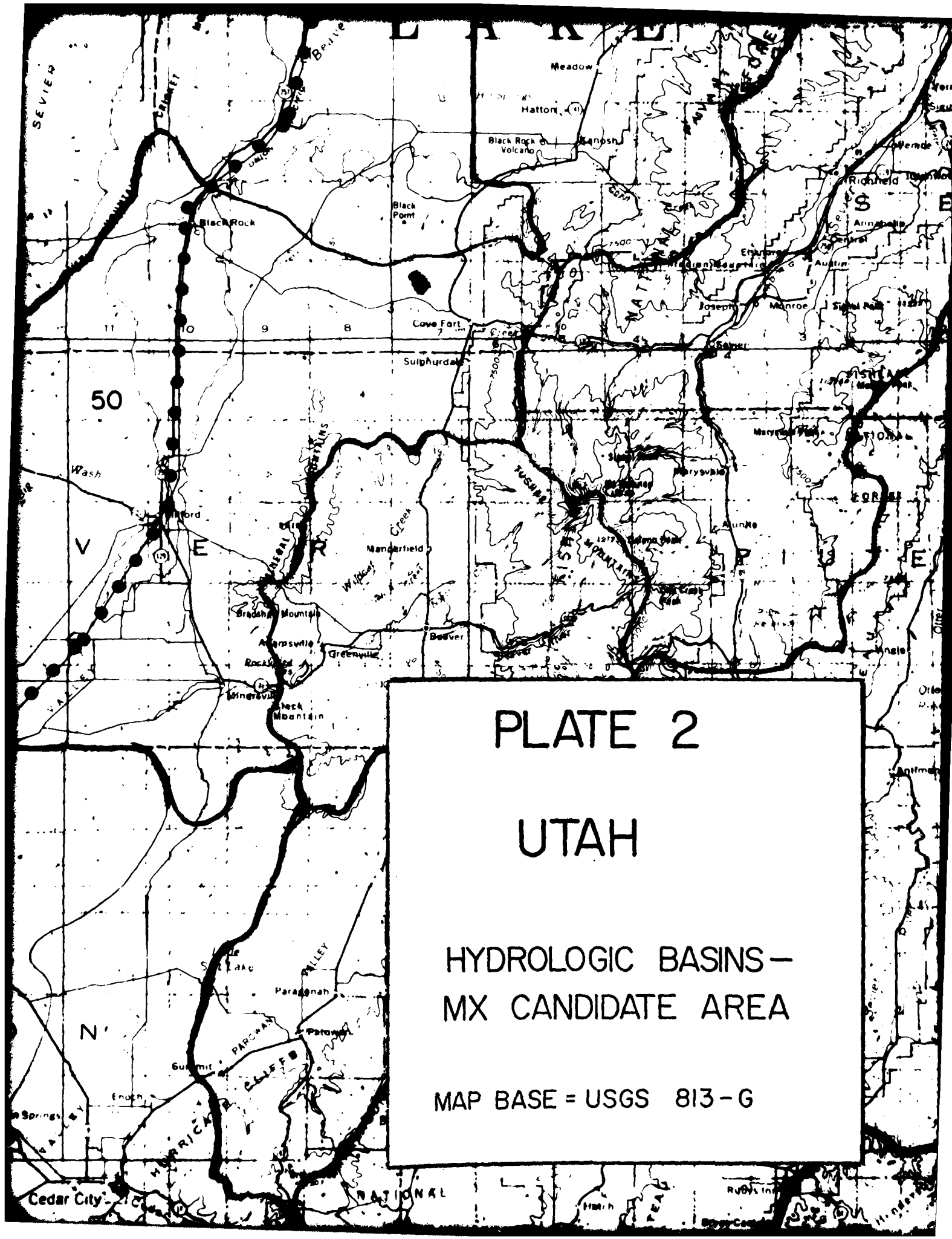


PLATE 2

UTAH

HYDROLOGIC BASINS -
MX CANDIDATE AREA

MAP BASE = USGS 813-G